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The Mining Journal

LONDON, NOVEMBER 25, 1960

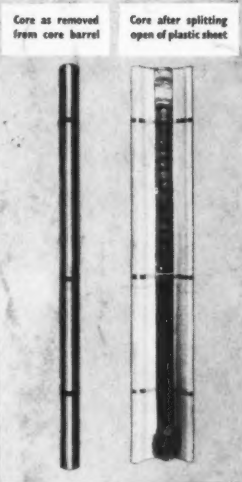
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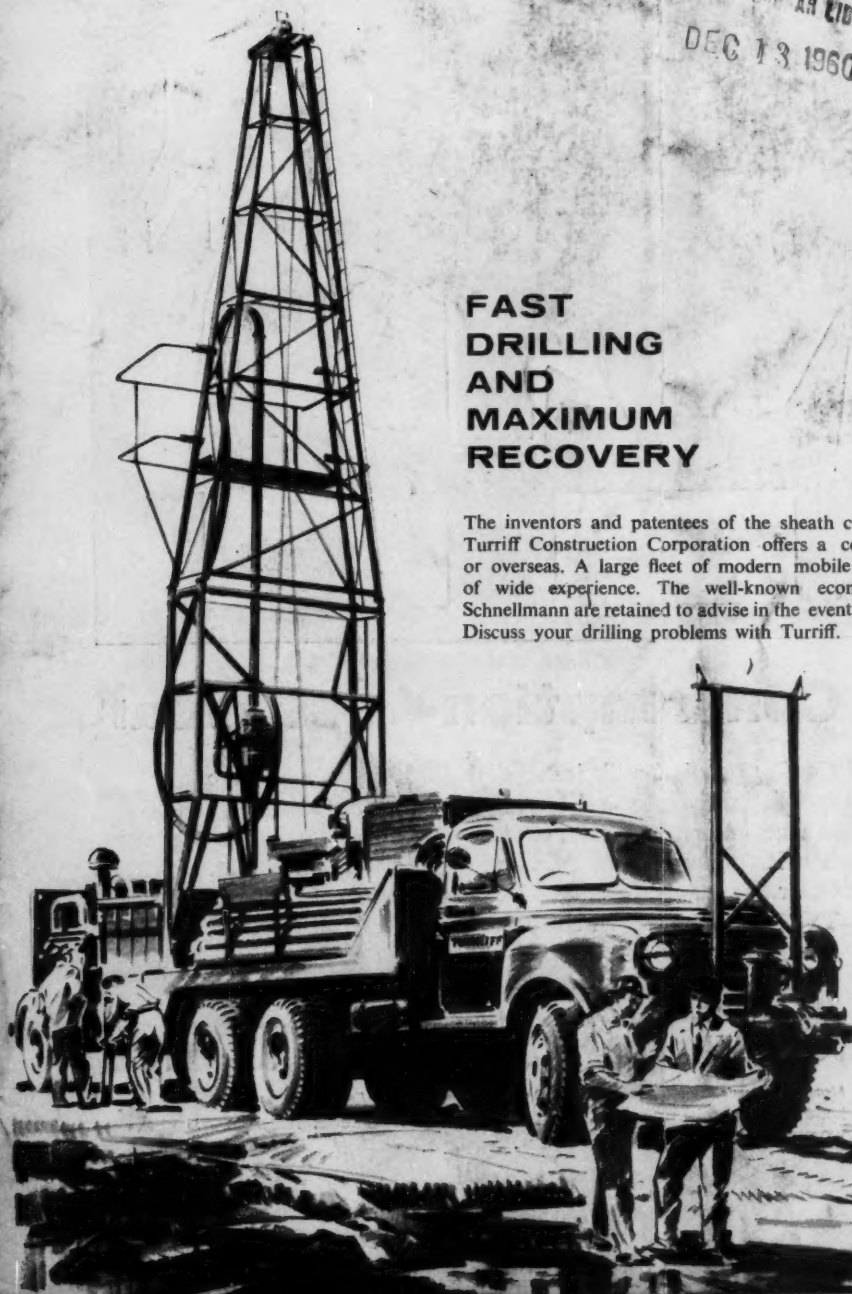
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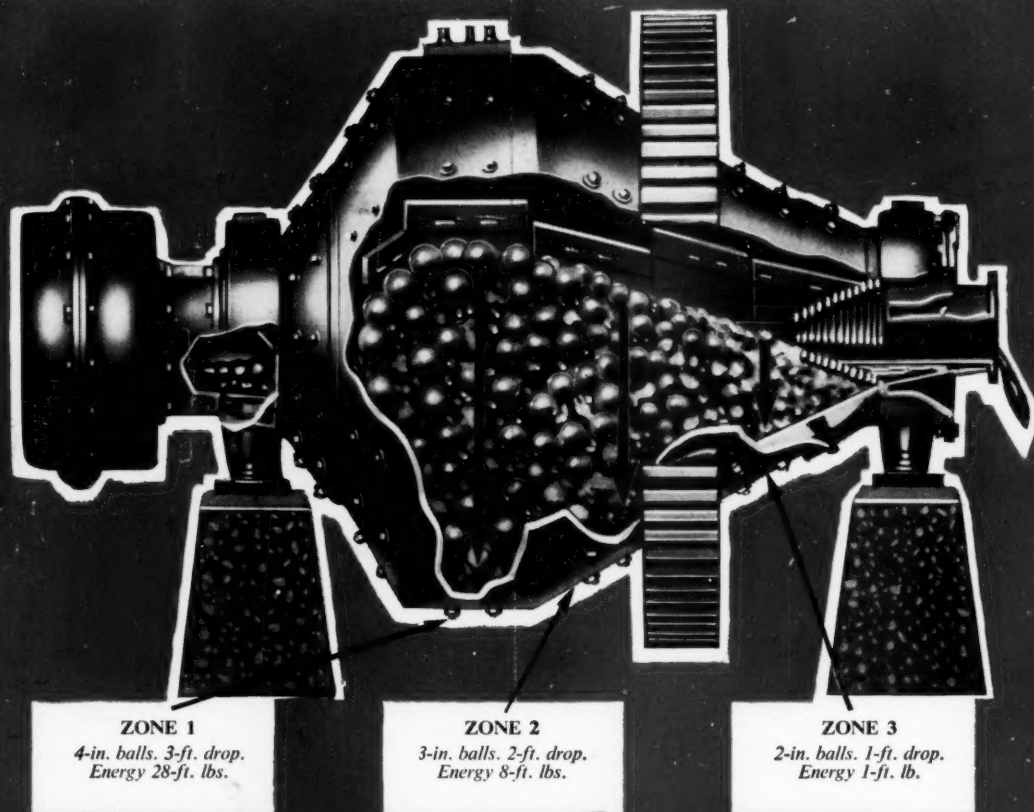
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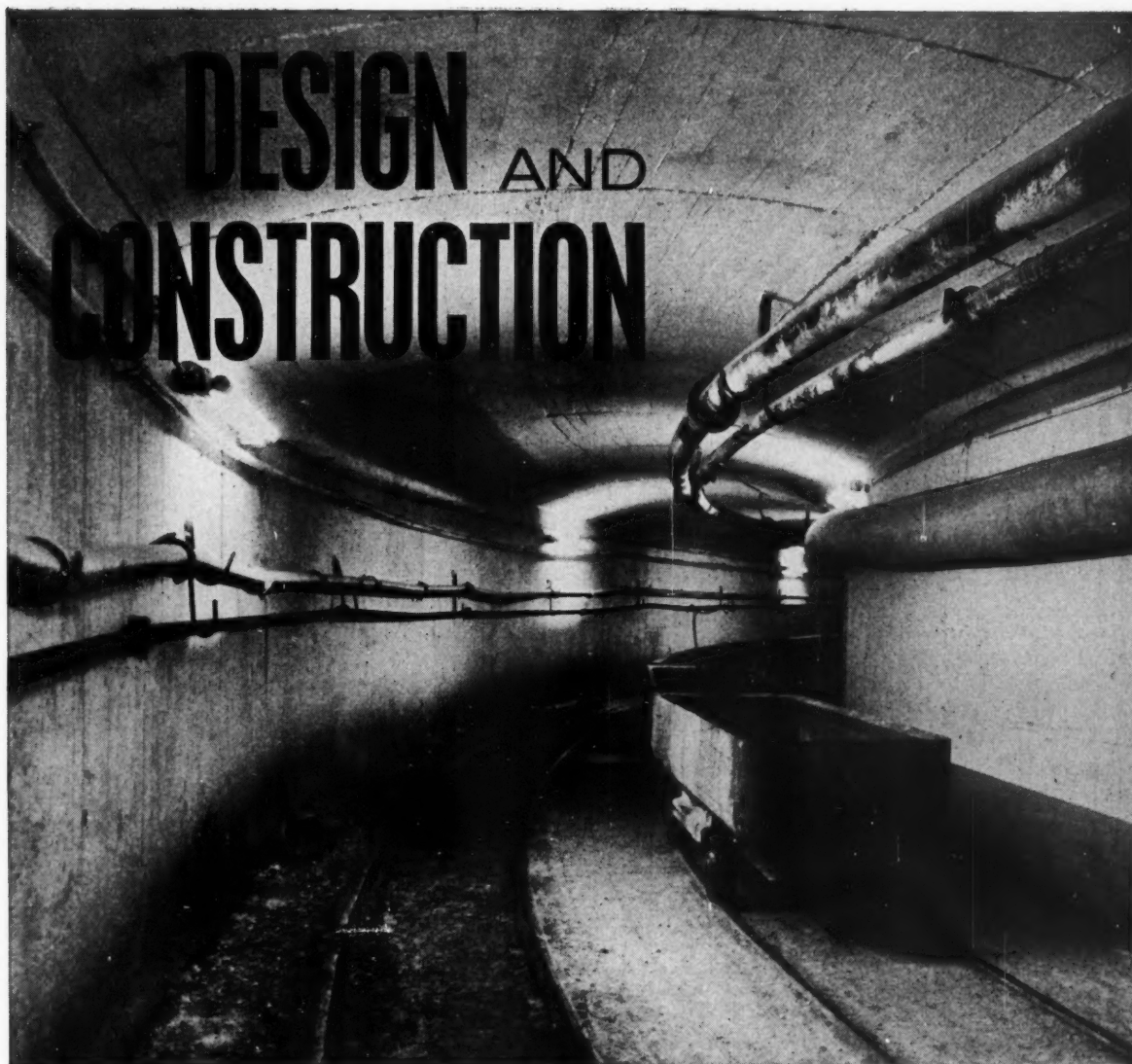
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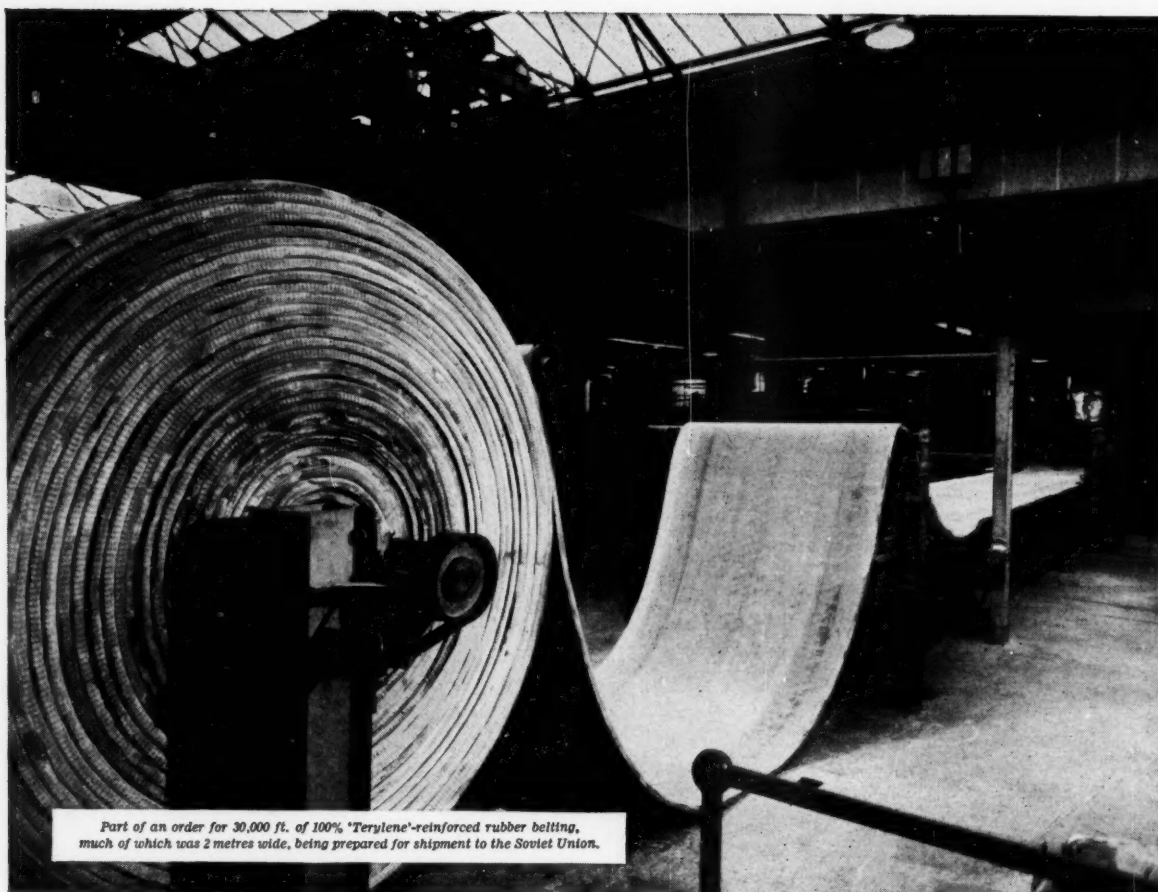


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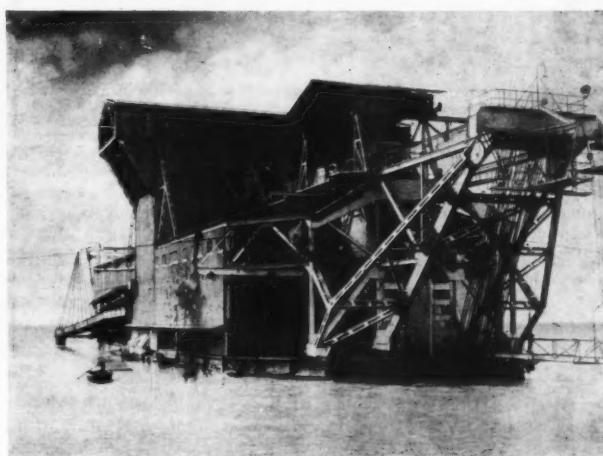




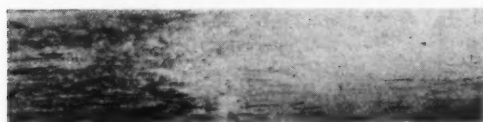
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The Mining Journal

London, November 25, 1960

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Prelude to a Conference

TO judge from the way that the matter has been treated in the popular Press, there are many people who think that, when the constitutional conference comes to consider the future of the Central African Federation, it will have before it only the Monckton Report. This, of course, is far from the truth. There are many documents that will be entered, and among them will certainly be the annual reports and chairmen's statements of the two great copper groups that have come out in the last week. They, too, are evidence that will have to be considered, and very encouraging evidence most of it is. For when the dust of political conflict has settled a little, it has to be admitted that the whole future of the area depends on the well-being of these enterprises—on their accumulated capital and ease of access to more, and on the mining, processing and marketing skill that they have brought together. Let them fail, and the whole area fails. Without them, there would have been no Federation and, now, no constitutional conference.

On the whole this has been a successful year for the copper companies. The European economy registered continuous growth, though there has been a good deal of flagging in the United States. In the late summer and autumn of 1959, strikes in the American mines helped to postpone the surplus of copper that has since appeared and left the Rhodesian mines in a comfortable position to meet demand. In the later part of the financial year, the excess of world supply over demand became an embarrassment but not soon enough to spoil the year's results. In fact both groups found themselves almost back to the record profits of the year ending June 1956.

A second encouraging feature of the statements is that, in addition to the reports of successful copper mining operations, the news in other respects is also good. Thus, whatever difficulties the Federation may face, the copper companies are continuing to prospect, invest and generally develop their interests. There is no sign of any cautious retrenchment, or hedging of risks into other territories.

R.S.T. exploration companies have had another busy year and the Kafue Flats experiment continues on its planned course. The Dutch consultants retained to advise on the scheme have said that they regard the Flats as more suitable for peasant than for heavily mechanized farming. This may be a less exciting prospect than once seemed likely; but, sociologically, the development of prosperous agriculture of a peasant type on a large scale may have a great deal to commend it.

It is the same with Rhodesian Anglo American. Its exploration subsidiaries have been pressing on with their work. Riscom goes its appointed way, and its whole development programme, estimated to have cost £9,200,000 (including a sheet products mill recently added to the schedule at an extra £900,000), will be completed in the spring of 1961. Rhodesian Acceptances has prospered and during the course of the financial year the British and Rhodesian Discount House was set up to handle the deposit receiving business.

Of course there were disappointments. There always are. R.S.T.'s imaginative offer of £90,000 to start a coffee growing scheme in Nyasaland foundered on political differences. All the same, the message of these reports to the constitutional conference is perfectly plain. It is this. Your job is not to create a polity but merely to devise a constitutional framework for a society that already flourishes, however unevenly, and may flourish as splendidly as any in Africa.

One matter that will very considerably dictate the extent to which this society flourishes is the price of copper. Both R.S.T. and Anglo American have been much exercised by this in the past year, in which supply has again tended to surpass offtake, and it would seem that in their approach to this problem, the two groups are not entirely of the same mind. Rhokana stockholders are told: "Our opinion is that at such times (of over supply) the right step is first to cut sales not production. This enables producers to establish reasonable stocks. . . ." The R.S.T. group are told: "The philosophy of cutting production and/or sales in the event of over supply seems to be increasingly accepted in the industry", and later, Sir Ronald goes on to renew the advocacy of a scheme that so far has divided the two groups—that of selling copper at fixed prices but in a way which "would not necessarily mean the elimination of the London Metal Exchange as a useful pricing medium".

Finally, Sir Ronald speaks of a growing understanding between producers and fabricators of each other's problems. This is all to the good. Nobody could pretend that today's methods of marketing copper are ideal. There must be give and take. And it is only out of a better understanding of each other's problems that any genuine reform can come. All the same, if Sir Ronald had added the merchants to the producers and fabricators as needing to come to a better understanding of each other's work, it might have created a more reassuring atmosphere.

Obviously, in their statements this year both chairmen look forward to the constitutional conference that is to come. It could hardly be otherwise. Better than most they know that the Federation is at a cross roads. So much the more encouraging therefore that, since the closing of the financial year, there has come news that the European Mineworkers' Union has accepted a new programme for African advancement which promises at last to lead to a single unified wage structure for European and African. (*The Mining Journal*, November 11, page 530.) How much better of course if this programme could have been agreed a year or two sooner. Nevertheless, while this would have been desirable, it has to be recognized that, in advancing towards a multi-racial society, there are dangers in different areas of that society getting too much out of step.

In any case, all advancement is dependent on education. It is therefore good to see that all the copper companies are joining with the government to make a concerted drive to improve what is generally thought of as "public education". This is none the less vital for being medium to long term. At the same time there is need for a more immediate drive to train and educate adult Africans to take advantage of the opportunities now open to them under the African advancement agreement. Unless this technical side of the educational programme is vigorously pressed forward, the whole advancement scheme is going to be nullified.

Finally, to the Monckton Report itself, on which both chairmen naturally give their clear views. While there is a very great area of agreement on what the two men have to say, Sir Ronald appears to give a more wholehearted welcome to the Commission's proposals than does Mr.

Oppenheimer. Whereas Mr. Oppenheimer certainly has reservations and makes them clear, Sir Ronald, while strongly supporting the general principles underlying the chief recommendations in the report, merely says that it does not necessarily imply agreement with every detail.

In fact the reservation that Mr. Oppenheimer makes is a very genuine point. To produce mathematically equal white and black representation might as easily arouse racial feeling as quell it. "I believe", he says, "that the real hope in a multi-racial country such as the Federation is to stick as firmly as possible to the principle of individual merit, which to my mind implies that anyone irrespective of race, who has certain reasonable educational or property qualifications, must be entitled to vote on a common role. We must accept that this means a white political majority now and a black political majority in the future".

From their assessments of the Monckton Report, it would perhaps be fair to say that while Sir Ronald Prain shows more awareness of the dangers of going too slowly along the path to full African political maturity, Mr. Oppenheimer is more alive to the dangers of going too fast.

It is Mr. Oppenheimer, too, who makes a special point of questioning the Monckton Commission's right to discuss secession. This is a matter made much of elsewhere in Britain and the Federation; but surely the truth is that if Mr. Macmillan had said that the Commission could consider secession, no white African would have co-operated with it; and if he had said it could not, no black African would have co-operated with it. The purpose of the Monckton Commission was not to decide anything but to get facts on which a decision could be made, so it was important to choose a vague wording that would not offend anyone. It may be that Mr. Macmillan was led by Sir Roy Welensky to rephrase the Commission's mandate in a way that he could legitimately claim ruled out a consideration of secession, but there was surely no doubt of Mr. Macmillan's intention or of his purpose in choosing a vague wording.

This, however, may seem a small point when the constitutional conference eventually gets down to work, for there is no doubt that secession is one of the matters that will have to be considered. The significant point is, however, that the chairmen of both copper groups no less than the Monckton Commission are agreed that secession would be a tragedy. Economically, the future of the area lies in Federation. There can be no dispute on this and the constitutional conference will meet in the knowledge that the two men who have done so much for the area in the past believe that the future must lie in a multi-racial society, and that in their mining concerns and in their interest in other matters such as power, railways, education and agriculture, they are actively working to bring this about.

SOVIET MONETARY REFORM

The assumptions regarding the coming Soviet monetary reform, made in our issue of November 4, 1960, pp. 501 and 502 (*Soviet Metal Prices*, by Jan Kowalewski), have proved to be correct.

On November 15, 1960, the Soviet Government announced the exchange rate of their coming "heavy" rouble, to be introduced on January 1, 1961 as being 0.9 roubles for one U.S. dollar. This means that the pound sterling will be worth 2.52 roubles instead of the present 11.2 roubles.

In the words of the Soviet Finance Minister, "the new rouble exchange rate enables comparisons to be made between world prices and Soviet wholesale prices, since the average level of world market prices will in the main be equal at this exchange rate to the average level of wholesale prices in Russia". This official statement fully confirms the conclusions reached by our contributor in his discussion of Soviet wholesale prices, with which the article was basically concerned.

The Soviet Press has sought to present this move as a victory for the Soviet economic system on the ground that the new rouble will be "stronger than the dollar". In actual fact, however, the rouble has been devalued by roughly $2\frac{1}{4}$ times, since the gold content of the new "heavy" rouble (equal to 10 existing roubles) has been fixed at 0.928741 gm. of pure gold, whereas the gold content of the present rouble is 0.22168 grammes.

Similarly, the existing exchange rate of one U.S. dollar equals 4 roubles and one pound sterling equals 11.2 roubles will be changed (in terms of existing roubles) to 9 roubles per U.S. dollar and 25.2 roubles per pound sterling, which is approximately equivalent to the existing "tourist" rouble rate. In new "heavy roubles," the rate of exchange will be 0.9 roubles for one U.S. dollar and 2.52 roubles for one pound sterling.

Within the Soviet Union all prices and wages will be reduced ten times, following the ten-fold increase in the value of the rouble. This means that a worker who has been receiving 600 roubles per month, valued at the present exchange rate at about £54 sterling, will receive as from January 1, 1961, 60 heavy roubles valued at the new exchange rate of only £23 sterling. His domestic standard of living will not be affected.

In the article published in our issue of November 4, our contributor analysed the impact of the new exchange rate on Soviet wholesale prices of metals, but his calculations were based on the assumption that the new rate would be one rouble equal to one dollar; i.e. the reduction in the prices of metals as calculated in pounds sterling would be $2\frac{1}{2}$ times. In fact it is only $2\frac{1}{4}$ times. However, the alterations to the relevant columns of table 6 are small. Prices at the new exchange rate of £1 equals 2.52 roubles are as follows, the relation between the Soviet price and the Western market price being given in parentheses:

Cast iron £16-£20 (1.0-1.1), rolled steel £29-£39 (1.0-1.1), sheet steel £59-£76 (1.2-1.9), copper £275 (1.1), aluminium £222 (1.03-1.35), zinc £149 (1.5-2.0), nickel £1,150 (1.9), lead £341 (4.5-5.5), tin £5,000 (6.25-6.6). In terms of U.S. dollars, at \$1 equals 0.9 rb., the Soviet price of gold becomes \$287 and the relationship with the Western market price 8.2.

Since the scale of discrepancies between Soviet and Western market prices is very large (from 2 to 18 times), the "equalization" should be understood in the framework of total Soviet exports. This is why the Soviet Finance Minister referred specifically to the average levels of the Soviet and Western market prices.

While there is a wide divergence in the opinions of Western observers as to the influence of the pending monetary reform on Soviet foreign trade, it has to be remembered that the growing export capacity of the U.S.S.R. urgently needs this readjustment of prices in relation to Western market prices, not only for reasons of domestic accountancy, but also to make sales abroad more profitable and competitive.

Opinions also differ as to the role of the new rouble as marketable currency. In general, however, it would appear that the new Soviet currency, backed by its official gold content and strengthened by the realignment of domestic wholesale prices with those of the world market,

should be in a distinctly stronger position to be accepted as a deposit in Western banks. Instead of exporting gold, the U.S.S.R. will be able to draw credit on its future rouble deposits, thus achieving a long-standing ambition of Soviet economists.

BONUS CLAIMS IN AUSTRALIA

A bonus is usually regarded as a gesture of goodwill and of appreciation for services by an employer toward his employees, writes our Australian correspondent. However, there is a growing tendency to regard a bonus as a right to be granted irrespective of the ability of the company to pay it. There is complete disregard of the people whose ability, energy and courage have established a new industry and made employment possible; who have faced heavy financial risk in its establishment and who have provided a high standard of living, of housing and amenities, superior to many city conditions, in outback mining areas, and who, in depressed times, must forego any return on their investment, while the worker draws his full rates of wages and enjoys all the amenities and comforts provided by the company, even to prosperity bonuses, as was the case in very recent years when the Broken Hill companies were operating at a loss.

If a bonus is considered inadequate, the matter is disputed and the claim taken to the Industrial Court, although it would seem that such a payment was outside the functions of wages awards. Recognition of this view has been unsuccessfully contested. The Mary Kathleen Uranium Mines bonus case has been decided by the Industrial Court after the company's equitable bonus had been refused. There were two claims before the Court. The combined unions sought a bonus of £20 7s. 6d. per week, with three weeks annual leave for day workers and four weeks for shift workers, payment of fares for workers and their families travelling on annual leave. The Australian Workers' Union, claimed a production bonus of £35 per week. The claim by the Australian Workers' Union for a separate award was rejected by the court. Initially, the Mary Kathleen Company had agreed to pay a bonus of £5 per week as a minimum, which was accepted; later the minimum was fixed at £7 per week, plus a weekly additional amount fixed in reference to dividends declared from time to time, which for some weekly periods would have been a total bonus of £8 2s. 6d. per week. The judgement of the Court fixed the production bonus at £10 per week; the claim for limitation of overtime to 12 hours was rejected as also was the claim for treble time for work done on holidays, and the demand for the right to hold union meetings in or around the mine or works was also rejected. Payment for travelling time for employees and families on annual leave was granted although there was some reluctance on the part of the court to this last concession.

The latest demand comes from Mount Isa Mines Ltd., and is for a reduction of hours from 40 to 30 per week, together with an increase in the bonus payment from the present £8 per week to £25 per week, with marginal increases of 41.6 per cent in all mining and associated awards. A further demand is for increase in the minimum pay for contract and piecework from 30 per cent to 50 per cent above the ordinary weekly rates. Overtime in and around the lead smelters, it is claimed, is not to exceed two hours daily or 10 hours per week; double time to be paid for the first two hours and quadruple time thereafter. In the copper section, overtime to be paid after 7 hours per day on the basis of double time for shift workers.

Technical Developments

FORMER speakers on other occasions have shown the need for higher face output per manshift if the industry is to hold its own, and their remarks are just as true today. Let us see how improvement has come about.

At the Coalface

On a typical face 200 yds. long in a 4 ft. thick seam, undercut 5 ft., the men will be distributed something like this:

TABLE 1

| Item | Number of Facemen | % |
|-------------------------|----------------------|-------|
| Undercutting | 6 | 7.5 |
| Drilling and blasting | 6 | 7.5 |
| Filling | 30 | 37.5 |
| Moving conveyor | 4 | 5.0 |
| Packing and drawing off | 19 | 23.5 |
| Ripping | 10 | 12.5 |
| Steel checkers, etc. | 5 | 6.5 |
| Total | 80 | 100.0 |

Total output per day—400 tons run-of-mine.

It will be seen that the actual fillers constitute little more than a third of the facemen, and when it is recollected that the facemen themselves are only about 37 per cent of the total labour force in the industry the importance of improving their ratio is easily seen.

As Table 1 shows, packing occupies 23.5 per cent of the facemen, so in recent years there has grown up a practice of encouraging the roof in the waste to collapse so freely that it actually fills the void as thoroughly as hand packing does, thereby avoiding the need to build packs. The stone when broken occupies half as much space again as when solid, so that if the roof will break up to a height of about 1.75 times the seam thickness, the upper broken layers and the still solid rock will be in contact, there can be no more falling, and as the upper strata subside they will settle on to and consolidate the fragments beneath. Such a process is called "caving".

The row of props on the gob side must obviously be so robust that the unsupported part of the roof behind them snaps off short. Fortunately, the roof has a tendency to do this because undercutting creates a plane of weakness in it at the back of the cut. The extending adoption of caving has had a most beneficial effect upon face efficiency.

There are two other developments on the coalface which are worthy of mention, namely, the use of compressed air for blasting, and the practice of forcing water into holes drilled in the seam to reduce the amount of coal dust in the atmosphere and to permit the discharge of explosives when actually under water pressure.

The present successful equipment for compressed air blasting originated in the U.S.A. Air is compressed to 10,000/12,000 lb. p.s.i. and flows down a steel pipe $\frac{1}{4}$ in. in dia. (1 in. outside dia.) to the face where it is then led via a flexible hosepipe to a tube or shell. The operator inserts a steel sealing strip at the face end of the shell which he puts in the shothole: he then retires a few yards and opens a valve in the compressed air range to admit the

air to the shell, turning it off as soon as the sound of the flowing air ceases (as that shows the shell pressure is equal to line pressure) and waits for the steel strip to burst, on which the air issues at the back end of the shell with enough force to shatter most coals. The process is both safer and more convenient than ordinary explosives. The shell can be used repeatedly, all that is necessary is to insert a fresh strip for each discharge. Providing the machine blasts more than 400 tons of coal per day it is as cheap as ordinary explosive, becoming cheaper with use.

The idea of pumping water into the coal *in situ* to suppress dust is not new, but it is only comparatively recently that apparatus has been available for doing so easily and quickly. Not all coals are amenable to the treatment: some are so dense that the water cannot penetrate even at 4,000 lb. p.s.i.; others are of such open texture that the water passes through the seam into the roof or floor.

An extension of the process has led to pulsed infusion shotfiring. In this the shothole is first infused with water under pressure, then the apparatus is taken out, the explosive inserted, the apparatus replaced, the water pressure re-applied and the explosive fired. The risk of igniting fire-damp is thereby minimized, and the amount of dust is reduced. The method cannot be used when the coal is undercut, as the water could not be retained, so the quantity of explosive required per ton of coal is somewhat greater than for normal blasting.

A development of recent date, also introduced from the United States of America, consists of the use of bolts with expanding heads for holding weak roof strata together, thereby increasing their strength. Such bolts can be used on the coalface, at ripping lips where the roads are being made, or in roadway enlargement.

On power loaders the latest developments might be mentioned. It will be realized that the primary purpose of the power loaders is to tear the coal from the solid face and put it on to a conveyor. The process makes "smalls", and broadly speaking, the more successful the machine the more "smalls" it produces. The demand for "large" is one reason why power loading has not advanced more rapidly this last year or two.

Progress has been made chiefly in improved performance of existing machines by the use of greater horsepower and the application of hydraulic drives. From faces 250 yds. long in seams say 3 ft. 6 in. to 4 ft. 6 in. thick it is fairly common now to obtain by power loaders up to 1,000 t.p.d. at a face output per manshift of 11 to 12 tons, and in South Yorkshire recently figures have been published showing face advances of up to 23 yds. per week. This was something quite unthought of only a year or two ago, 8 yds. then being considered a satisfactory figure. Recently in Lancashire one machine has yielded over 1,600 t.p.d. at a face output per manshift of 17 tons.

On the Haulage Roads

Let us now consider the means of getting the coal away from the face.

In the great majority of cases this is by conveyor delivering into tubs or mine cars at a loading point which may

s in the British Coal

Industry

be nearer the pit bottom than the workings or vice versa. Where the gradient is easy there is much to be said in favour of conveying almost to the shaft bottom, as is done in some of the most productive mines. If the gradient is very slight it may well be better to haul by locomotive for the first mile or two from the shafts, especially if cars of two tons capacity and upwards are used. This applies particularly to mines laid out on horizon principles, in which the main roads are driven level from the shafts at various depths and the seams are worked between successive levels.

Locomotives have the advantage of being useful for two-way traffic, carrying men and materials as well as coal. The locomotives themselves can be diesels of, say, 100 h.p. weighing 15 tons, battery driven of 45 h.p. weighing 14 tons, or more powerful electric locomotives of 190 h.p. weighing 25 tons and driven from overhead trolley wires.

Of these the last one is undoubtedly the most efficient for hauling large outputs over long distances, but it requires somewhat special underground conditions: there must be no risk of gas, the road must be high to give the necessary clearance for the conductor and, what is most important, the road must be stable. In practice it is this condition which is usually the limiting one. The way in which transport efficiency has improved is shown by the following table:

TABLE II

MANSHIFTS PER THOUSAND TONS—TRANSPORT

| Year | Great Britain |
|------|---------------|
| 1954 | 158 |
| 1955 | 163 |
| 1956 | 169 |
| 1957 | 172 |
| 1958 | 140 |
| 1959 | 128 |

Hoisting

The orthodox system is to employ two cages in one shaft actuated by a drum-type of winding engine with ropes attached at either end of the drum, one over and the other under it, so that as one cage ascends the other descends and they arrive at pit top and bottom simultaneously. So long as hoisting is to take place from one level for some years this is as good an arrangement as any, but when it is necessary to hoist at will from any one of several levels it is better to have only one cage, or skip, and a counterweight: the cage can be brought opposite the desired landing without bothering about the position of the counterweight, and to compensate for the loss of the other cage the one in use can be made bigger. This is a positive benefit for electric winding engines which are most efficient when a heavy load is being raised slowly.

With modern equipment the ropes have become large and heavy, being of 2½ in. dia. locked coil weighing 74.28 lb. per fm. or 16.5 tons for a 1,000 yd. shaft, so in recent years, with the introduction of the counterweight, has come the friction winder using four smaller ropes side by side in place of one. Such ropes need be only 1½ in. dia. to give equivalent breaking strain. To balance them there

This survey is extracted from the Cadman Memorial Lecture by F. G. Glossop, O.B.E., production director, North-West Division, National Coal Board, delivered to the Royal Society of Arts on November 16, 1960, with R. G. Baker, C.B.E., president, Institution of Mining Engineers, in the Chair

are suspended beneath the cage, forming a loop in the pit bottom and coming up to the underside of the counterweight, two ropes of equivalent weight so that the only out of balance load in the system is that of the coal itself. Movement is imparted to the ropes simply by the friction between them and the drum, the circumference of which is lagged with wood and provided with grooves to take the ropes.

For maximum shaft capacity skips are better than cages. Unfortunately, skips cause breakages and so are not quite so popular as they might otherwise be.

Ventilation

A most useful aid to improved ventilation has been the introduction in recent years of methane drainage. This has been made possible by the development of extractors suitable for underground use and rapid boring machines capable of drilling holes through 150 ft. of strata in a few hours.

The quantities of firedamp contained in the strata are immense. Usually the gas is liberated quietly during the working of the coal and passes out of the mine with the ventilating current. But in certain seams the quantity given off is too great for reasonable ventilation velocities and quantities and special drainage is then invaluable.

It is seldom possible to draw gas from the virgin coal; it is usually extracted from the beds above the working face, actually as they are lowering, because then the gas can be drawn from the cavities in which it has accumulated.

The process consists essentially in drilling upwards from the return gate, and sloping over the waste, a borehole for, say, 150 ft. and cementing in it a pipe.

The gas is obtained by suction and the yield will vary from hole to hole. By drilling a succession of holes, as the face advances, and coupling them to a common suction main, a total of 1,000 cu. ft. per min. of pure methane may be collected in the more gassy mines. The gas, if small in quantity, can be piped to a main return airway

and discharged in the general body of the air. If the quantity is large it may be piped to the surface for colliery power or for sale to the local Gas Board. But however efficient the extraction may be, it is usually only possible to collect about half of the total emitted; the balance passes off in the air stream.

Other Underground Processes

Before leaving underground operations two other developments should be mentioned, namely, the much more rapid sinking of shafts and driving of tunnels now being achieved.

Formerly a rate of 40 yds. per month of completed shaft, 18 ft. internal dia., was considered good, so that a shaft 880 yds. deep took over two years of actual sinking, quite apart from all the preliminary work of erecting the headgear and winding engine. Recently, using South African methods, speeds of 100 yds. per month have been attained in shafts 24 ft. dia., an increase of four times in the volume of ground excavated and of $3\frac{1}{2}$ times in walling.

Similarly, tunnels which were driven at 40 to 60 yds. per month can now be driven 300 to 400 yds. in the same

time, thanks to improved drilling and shotfiring techniques and the use of power operated shovels.

The overall result is that development costs can be held, if not actually reduced, and projects can be brought to fruition so much earlier. On a £10,000,000 colliery a saving of one month means some £50,000 saved in interest charges alone.

Table III shows the growth of mechanical cleaning over the years—it is a growth which will continue.

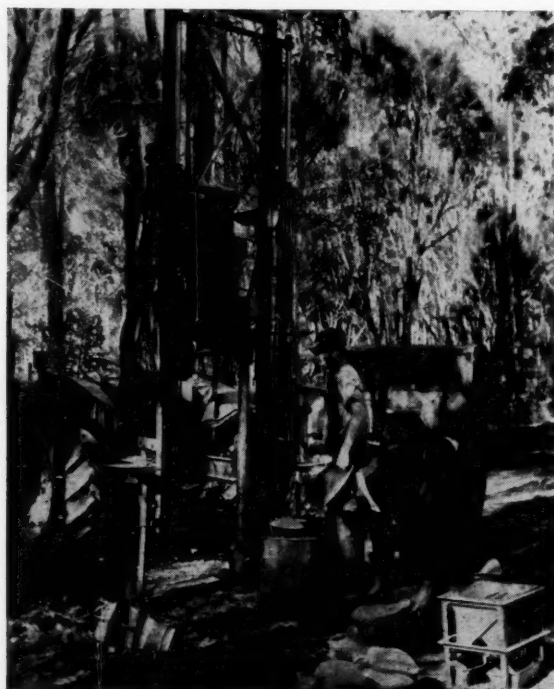
TABLE III
COAL CLEANING

| Year | Mechanically | By Hand | Untreated |
|-----------------|--------------|---------|-----------|
| | % | % | % |
| 1947 | 48.2 | 30.6 | 21.2 |
| 1953 | 54.1 | 26.9 | 19.0 |
| 1954 | 55.4 | 25.1 | 19.5 |
| 1955 | 57.3 | 22.8 | 19.9 |
| 1956 | 59.3 | 20.2 | 20.5 |
| 1957 | 61.1 | 17.5 | 21.4 |
| 1958 | 61.8 | 15.6 | 22.6 |
| 1959 | 62.1 | 13.8 | 24.1 |
| 1960 (1st half) | 62.0 | 12.4 | 25.6 |

Western Australian Bauxite

TESTING of a major bauxite deposit in the Darling Ranges, close to Perth, capital of Western Australia, is proceeding. According to the operating company, Western Aluminium N.L., a subsidiary of Western Mining Corporation Ltd., reserves of ore containing 44 per cent aluminium oxide are already known to exceed 37,000,000 tons. An area of 6,250 sq. miles is held under lease.

The illustration shows testing operations at the field.



Field Under Ore Test

Several geologists are active in the field and three drilling crews are operating. The drilling is carried out on the surface laterite (to a maximum depth of 50 ft.) and samples are being taken out in order to establish the ore content over a wide area. A large area of ore at minimum depth has been indicated. Since October, 1958, the company has drilled over 2,500 holes.

A report issued by the company in July indicated that exploratory drilling from that date to April, 1960, had shown reserves of 37,000,000 tons of bauxite containing 44 per cent aluminium oxide (Al_2O_3) including 13,000,000 tons containing 47 per cent aluminium oxide. As yet, testing has covered only a minor part of the area known to contain bauxite. Current drilling continues to add to the reserves.

Bauxite is known to occur over an area from 20 to 60 miles east of the coast and extending from 90 miles north-east to 130 miles south-east of Perth. The ore can be quarried by opencut methods and accessibility to port facilities is likely to be of great significance in the exploitation of the field.

The company considers that the occurrence of the alumina in the trihydrate form, the low reactive silica in the bauxite and the generally good physical characteristics offset the rather lower grade as compared with some overseas fields.

The first shipment of bauxite from Kalamunda was made in October, 1959. It was sent to the Australian Aluminium Commission's plant at Bell Bay for test extraction of alumina. This year three trial shipments of 10,000 tons each have been made to Japan. The company hopes to establish an export trade on a substantial scale.

Placer Gold in Mosquitia

THE entire eastern half of Honduras, Central America, a vast expanse of unexplored jungle, is known only as Mosquitia or Mosquito Coast, after the disease carrying insect by the same name. The first expedition into the area comprised a \$50,000 safari that went overland from the village of Catacamas and penetrated the jungle until the river routes were encountered. The expedition then proceeded down the River Patuca to the Atlantic Coast. This is believed to be the largest single scientific expedition ever to be assembled in Central America.

Subsequent to this first expedition, the author has entered the area six times more including two large-scale expeditions equipped to sample further the placer gold deposits that were discovered on the first expedition. These works are believed to be the first attempt by modern science to appraise the mineral wealth of this little known area.

Techniques and Procedures

The sampling parties on the latter expedition utilized the same testing techniques and procedures as did the first party. The author personally advised and directed all the work

Patuca River: Quantities and Grades of Ore Sampled

| Sampling Pos. No. | Cu. Yds. Gravel | Average Grade Value (\$) | Remarks |
|-------------------|-----------------|--------------------------|--|
| 21 | 500,000 | 1.37 | Big bar or bench with approximately 10 ft. overburden. |
| 20 | 40,000 | .52 | Small bar, small gravel size. |
| 19 | 450,000 | .43 | Big bar, no overburden. |
| 19 | 200,000 | .43 | |
| None | 45,000 | (a) | Small bar |
| None | 37,000 | (a) | |
| None | 50,000 | (a) | Small bar |
| 18 | 60,000 | .72 | Bench above bar. |
| 18 | 35,000 | | |
| 18 | 740,000 | | Bench above bar |
| 16 | 750,000 | .95 | Overburdened on 500,000 cu. yd. |
| | 300,000 | .75 | |
| | | | Some boulders |
| | 30,000 | .75 | Small bar. |
| | 35,000 | .76 | Small bar. |
| 15 | 500,000 | .75 | Large Island. Some O.B. and big boulders. |
| 15 | 40,000 | .60 | |
| 15 | 40,000 | .72 | |
| | 50,000 | .90 | Visual estimate. |
| | 45,000 | .90 | Visual estimate. |
| | 300,000 | (a) | Overburden. |
| 13 | 380,000 | 1.54 | |
| 12 | 80,000 | 1.07 | |
| | 4,487,000 | .87 c. per cu. yd. | |
| | | Average (weighted) | |
| | | (a) Not sampled. | |

The heretofore unexplored Mosquitia jungles of Honduras were the scene of a large new placer gold discovery in the spring of 1959. A report on this original discovery was published in the August 5, 1960, issue of "The Mining Journal". Since the original report was written, the area has been further studied with very encouraging results. This article is a sequel to the first publication and covers the additional work. It is written by the same author, Mr. S. H. Glassmire of S. H. Glassmire and Associates, consulting geologists and engineers of Santa Fe, New Mexico, United States

On the latter expeditions each visible gold bearing gravel bar was sampled at representative spots throughout the exposed area of each bar. The gravels were concentrated in native gold pans (bateas) by native panners. The volume of each batea was known. The number of bateas taken at each sampling position was also noted and thus the value per cu. yd. could be calculated since the exact volume that each sample represented was known. Only the visible sand bars were tested in most instances. Benches, old meanders, etc., were ignored since for the most part they were covered with shallow overburden and thick jungle growth. (However, two benches were exposed in river cuts and these were sampled. The values obtained were about the same as the exposed beaches at these two locations which indicates that benches and old channels can be expected to be productive.)

The surface area of each exposed bar sampled was estimated; depth was also estimated by assuming the average depth to be at least the height of the bar above the mean low water level. (No drilling has been performed but in some instances pits were dug by hand in order to sample grade at depth.)

Results of Additional Testing and Sampling

The first 1959 expedition sampled bars which averaged out a value of 81 c. per yard, 2,400,000 cu. yd. of this grade of material being estimated to exist in all the sampled locations. Additional bars have been sampled since this first reporting and a total quantity of gravels existing in the area has been recalculated. Considering the new work, the total quantity of gravel in all bars examined adds up to 4,400,000 cu. yd. in a section on the Patuca River be-

tween this river's junction with the Cuyamel River and below a point downstream known as Valencia. Approximately another 1,500,000 yd. of gravel has been tested on tributary rivers known as the Blanco and Ulahaus. This would boost the total yardage examined to approximately 6,000,000 cu. yd. The average grade of all bars examined assays out to 87 c. per cu. yd. (This is an increase of 6 c. per cu. yd. since the average grade reported by the first expedition was 81 c. per cu. yd.) The range in grade of ore at various bars ranges from a low of 43 c. per cu. yd. to a high of \$1.54 per cu. yd.

The table tabulates the quantity and grade of ore at each bar sampled in the referred to above stretch of the Patuca River.

The free gold obtained averages out to be approximately 860 fine. Thus the grade of ore was calculated by assuming the free gold obtained to be worth approximately \$30 per troy oz. The average size range of boulders and gravels in the bars examined is estimated to be:

| Particle size | % (approx.) |
|-------------------------|-------------|
| +6 in. | 10 |
| +1 in. -6 in. | 25 |
| +10 mesh, -1 in. | 30 |
| -10 mesh | 35 |
| Total | 100 |

Ninety per cent of the gold in the Patuca River bars is in flake form. The ratios of the diameters of the colours is estimated to be 4-4-1, the large diameter averaging about 1/32 in. However, the size of the individual gold colours varies both with depth and with the size of large boulders present. All concentrates were examined for the presence of other minerals but besides gold none was found in commercial quantities. Large boulders, sticks, overburden, if any, were counted in the total yardage in order to make the values per yard as shown on the previous table realistic of what may be expected in mining the deposits.

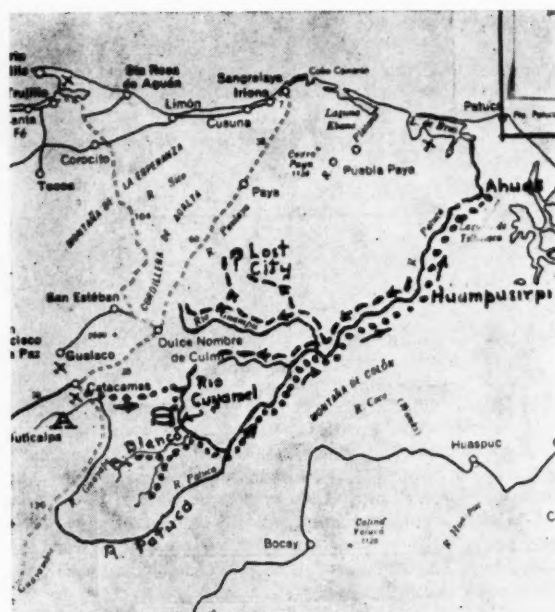
As mentioned elsewhere in this report, benches above the present bars, old channels, etc., were not within the scope of the work to date. However, both aerial and land reconnaissance of these sources of gravel could add another 30,000,000 to 60,000,000 yds. of produceable material.

Other Economic Considerations

1. The gold deposits examined are located deep within one of the thickest tropical rain forests in the world. The jungle growth is almost impenetrable. The entire area is void of any means of transportation outside of the river routes. The nearest airstrip is now approximately 100 river miles away from the gold bearing gravels. (The company investigating the deposit has started a new strip about fifty miles away from the deposit.) However, the Patuca River is believed to be navigable for dredging equipment clear up the river to the production area.

2. The Mosquitia jungles are sparsely populated by Suma and Mosquitia or Zambu Indians. These natives can be classed as only semi-civilized, but are friendly, and make very good labour at a daily rate of a dollar to a dollar and a half American currency per day.

3. As in most tropical rain forests, the annual precipitation is heavy. The dry season starts around the first of the year and continues into July. During this period the



The Glassmire expeditions into the Mosquitia jungles. Route of first expedition is shown as Second expedition is not plotted on map. Route of third expedition is shown - - -

rainfall is in the form of short showers. However, towards the end of July or August, heavy rainfall begins. It increases in intensity and becomes torrential in October and November. The weather, therefore, might hinder placer mining operations during the extreme wet season.

4. Also, as is the case of most tropical jungles, general living conditions for mining personnel are far from ideal. Disease carrying insects and tropical bacteria of all kinds flourish. This section of Central America is the home of some of the most deadly snakes in the world, including

Native labourers working on a typical bar



the fer de lance. Therefore, permanent insect and rodent proof living accommodation, where sanitary conditions can be kept, would be essential in any large scale mining operation in the area.

5. The gold bearing placer gravels do not contain any clay material, large boulders or other factors that would hinder any normal placer recovery operations. Any standard gravity separation dredge would effectively recover the gold.

6. The area abounds in wild game which could be counted upon to supply food to the personnel of any mining operation. This would be a big factor in so remote an area.

General Geology and Engineering Comments

Country rock in the entire area, for the most part, consists of a highly metamorphosed schist. This schist contains many small quartz-limonite veinlets averaging about 1 in. in width. All these small veins contain gold and it is therefore believed that these many small veins are the source of the rich placer gold. The possibility of finding in the future any large mineable lode-source is considered quite remote. However, the rich placer concentration along the Patuca might well have been derived from other placer sources. The high mountains on each side of the Patuca are terraced from the river up to the higher peaks. These flat terraces might contain mineable amounts of primary placer. In other words other significant gold discoveries will undoubtedly be made in Mosquitia in the future.

Very few of these possible primary sources of gold have been studied. The Guampu tributary of the Patuca and the Guampu tributaries have been examined by the author. This area contains some minor amounts of gold but for the most part the grade and quantity of ore were considered insufficient to substantiate any large scale mining operation, therefore from a reconnaissance point of view, this area should probably be excluded from any further consideration. The tributaries further up the river on the other hand merit further examination.

Conclusion

The area under consideration in the report contains high gold values as compared to other placer deposits throughout the world. The quantity of gold bearing gravels appears to be high enough to warrant a large scale mass production operation. (A limited drilling programme might be in order accurately to ascertain the exact volume of gravels available and to gain information so as to design a dredge properly.) In fact, there is data already known to indicate that this area might yet prove to be one of the biggest new gold discoveries of this century. As indicated above, there are certain hinderances to operating in this remote area. However, the values are high enough to warrant working out solutions to the obstacles and production of the gravel.

Even though the author considers it out of his field of speciality, he does want to comment on possible sidelights to a mining operation which are very obvious. It is felt that several small sidelines of business could be operated profitably by a mining company producing gold in Mosquitia. These possible sidelines are: The production of mahogany and other rare hardwoods that abound in Mosquitia jungles; the production of chicle, a rubbery substance used as a base in chewing gum; the production of agricultural products; the production of natural wild rubber; the building of facilities to accommodate tourists.

Mining in New Zealand

NEW ZEALAND'S gold production rose last year to 36,759 oz. from 24,981 oz. in 1958, and was the highest since 1954, when an output of 41,713 oz. was recorded. Silver production at 4,873 oz. more than doubled.

As in 1958, reports the Mines Departments in its Annual Statement, the greater part of this production came from the operation of three dredges, two on the West Coast and one near Alexandra. The increase in output during 1959 was due entirely to the better returns from the two West Coast dredges, which have been working in much richer ground. There was no production from quartz reefs, but gold was again obtained from cleaning-up operations at the refinery near Waihi and the battery site at Waikino. Control of operations at the latter site has been transferred to an overseas company, which proposes extending operations to tailings from previous gold mining operations. Production from alluvial mining, with the exception of one sluicing company, is now obtained from the desultory operations of fossickers working at weekends.

There was little or no activity in the development of base metal minerals, though interest was shown in the development of an iron and steel industry based on iron-sands and in the discovery of bauxitic material in North Auckland. In order that the investigation of these resources should proceed in an orderly manner, legislation in the form of the Iron and Steel Industry Act and the Bauxite Act was passed late last year. Investigation of the bauxite area has been carried out by officers of the Geological Survey and the Soil Bureau, but a programme planned for prospecting the iron-sands has been deferred, pending completion of the formation of an investigating company to include both government and private interests.

The most important development in the search for uranium-bearing minerals was the completion of the sampling programme by the U.K. Atomic Energy Authority of the deposits situated on the north side of the Buller River. Results from adits confirmed evidence obtained from the outcrops that there was no persistent horizon of uranium-bearing materials. The collection of bulk samples from the adits showed the grade of the material to be uneconomic in any circumstances. The attention of Lime and Marble Ltd., has been diverted to the south side of the Buller River. Some bunches of rich material have been found, but, generally, the mineralized material appears thin and non-persistent. At the Bullock Creek area, south of Westport, Uranium Valley Ltd. continued their investigation of mineralized portions of the Hawk Crag Breccia and the mineralization was traced into the adjoining watershed of the Pororari River, where the discovery was made that mineralization was not confined to Hawk Crag Breccia, but also occurred in the shales underlying the Breccia. In general, however, the results of prospecting in all the areas so far investigated for uranium have been disappointing.

Production of industrial minerals continues to make progress. Small increases have been recorded in the output of many minerals such as asbestos, bentonite, diatomite, dolomite, perlite, pumice, serpentine and silica sand.

In 1959, 2,809,594 tons of coal were produced, an increase of 89,560 tons over the quantity in 1958. Fourteen fewer mines were worked, the number being 166. Fifty opencast mines accounted for 888,218 tons and 116 underground mines for 1,921,376 tons. Most of the increase in production was due to the greater output from Kopuku Opencast, which supplies coal to the Meremere steam power station.

Machinery and Equipment

Ceramic Magnetic Wet Drum Separator for Cobbing

Stearns Magnetic Products claim to have introduced the first permanent ceramic magnetic wet drum separator designed especially for cobbing applications in the concentration of magnetite and reduced hematite ores. These new double-drum concurrent style units employ INDOX V, a new ceramic magnetic material which provides field strength readings of up to 850 gauss at 2-3/8 in. from the magnet face—ratings equal to or in some cases higher than those of old-style electromagnetic separators.

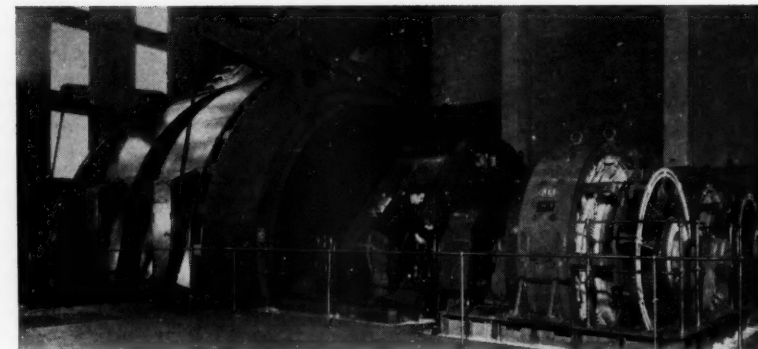
The use of high-strength INDOX V also provides significant savings in weight as well as in operating and maintenance costs, according to the manufacturers, as maintenance-free permanent magnet assemblies replace the heavy, failure-prone wound coils and d.c. power supply systems used in electromagnetic units.

Construction features of these new separators include the use of non-magnetic, corrosion-proof stainless steel for the feed box and collection tank and a special wear-resistant cylinder material. These new cobbing units have 36 in. dia. cylinders with a choice of 24, 36, 48, 60 or 72 in. magnet widths.

COAL EQUIPMENT NEWS

Mitchell Engineering Group Ltd. have been awarded a contract valued at approximately £440,000, for the construction of a coal preparation plant at Blidworth Colliery by the East Midlands Division of N.C.B. The plant will be designed to clean run-of-mine coal from the Top Hard and Hazel seams at Blidworth at a maximum rate of 400 tons per hour.

The coals will be screened in the plant at either 8 in. or 6 in., and the oversize material will be hand sorted on a rotary



Four A.E.I. 2,250 h.p. motors drive this winder in No. 3 Shaft at Mosley Common Colliery

picking table where the following products will be made; rejected stone, two qualities of +8 in. or +6 in. (i.e. hards and brights), and middlings.

The large coal will be loaded directly into railway wagons via loading booms. The large hand picked middlings will be crushed and mixed with the coal passing through the primary screen. The coal below 8 in. or 6 in. will be screened at 1 in. and the +1 in. material separated in Ridley-Scholes dense medium primary and secondary baths, yielding clean coal, middlings and dirt. The Top Hard and Hazel coals will be washed separately; the coal below 1 in. in size will be washed in Baum jig washers.

The erection of the plant will be so phased that there will be no interruption of output during the construction of the new washery. A point of interest is

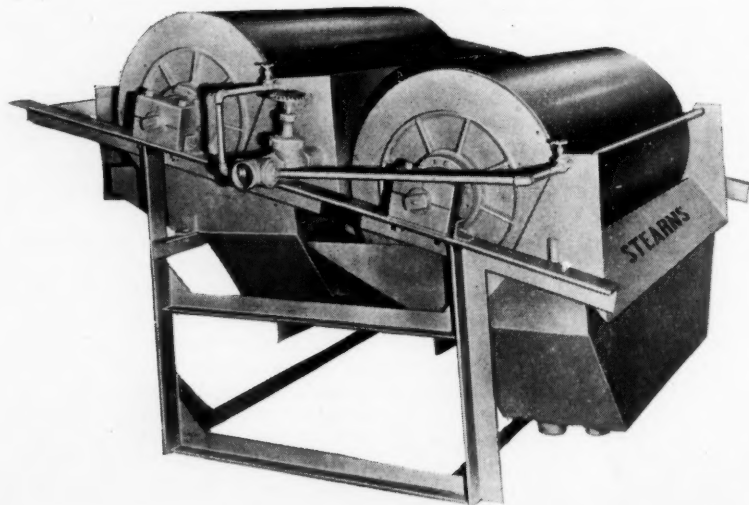
that the Ridley-Scholes dense medium system—for which Mitchells have the sole licence—is the only all-British designed dense medium system of coal washing on the market.

New AEI motors installed this summer in the winder house of No. 3 shaft at Mosley Common colliery, have raised the power of this winder to 9,000-h.p. Since it was re-commissioned, the Heavy Plant Division of Associated Electrical Industries Ltd. has received an order for another winder, to be installed in No. 4 shaft. Like the two winders recently installed at Agcroft colliery, in the same Area of the Coal Board's North-western Division, the No. 4 shaft winder will be driven by a 2,500-h.p. d.c. motor supplied by mercury-arc rectifiers.

Mosley Common colliery is some eight miles from Manchester, and modernization work has been going on there since 1944. Its estimated life is 100 years, and potential annual output is 1,000,000 tons. No. 3 shaft, the coal-winding shaft, has been widened to give it a dia. of 22 ft., and coal is at present being wound from a depth of 580 yds., although next year the winder will operate from a depth of 950 yds.

The No. 3 winder is now driven by four AEI 2,250-h.p. d.c. motors supplied by two motor-generator sets, each driven by a 2,500-h.p. synchronous induction motor. The motors work from an 11-kV., three-phase, 50 c/s supply, with an auxiliary supply of 620 volts. The winder operates two 12-ton skips in balance, and from the 950 yd. depth a single wind will take 78.7 secs. at a rope speed of 60 f.p.s. The mechanical parts were manufactured by Vickers-Armstrongs (Engineers) Ltd.

The new 36 in. x 72 in. permanent ceramic magnet wet drum separator designed by Stearns Magnetic Products especially for ore cobbing applications. This unit employs INDOX V, a ceramic magnet material which provides more than adequate field strength with savings over old-style electromagnetic types, in weight, maintenance requirements and operation cost



SALT IN MINING EXPLOSIVES

Research by the U.S. Bureau of Mines has confirmed that the addition of from 10 to 20 per cent ordinary salt to permissible explosives used in coal mines increases their safety factor. A report just published by the Bureau describes its studies which revealed effects of varying proportions of fine and coarse salt in cooling the flames emitted

by explosives, thus lessening their chances of igniting gas or coal dust.

As a result of the research undertaken in co-operation with the Institute of Makers of Explosives, one major United States manufacturer already has changed his formulae. He now adds 10 per cent fine salt to his entire line of permissible explosives.

It has been pointed out that the Bureau does not claim credit for the idea of adding salt to explosives as the practice originated in Europe. However, the Bureau has proved in a series of 2,400 test explosions of 87 different formulations, that permissible explosives with salt additives are safer and that fine salt is more effective than coarse salt.

From 80,000,000 to 100,000,000 lb. of permissible explosives are manufactured annually in the United States and the Bureau believes it is quite likely that all makers of permissible explosives eventually will adopt salt formulae. *Report of Investigations 5683*, "Reducing the Incendivity of Permissible Explosives by Sodium Chloride," can be obtained from the Publications-Distribution Section, Bureau of Mines, 4800 Forbes Ave., Pittsburgh 13, Pa.

TELEVISION UNDERGROUND

It has been reported from Canada that a closed-circuit industrial television system, supplied by Canadian Marconi Co., has been installed by Gunnar Mines Ltd. for safe and effective control of the skip as it discharges to surface bins. As Gunnar's uranium-mining operation on St. Mary's Channel, Athabaska Lake, approaches the economic limit of the highly-productive open pit, the company is becoming increasingly more reliant upon production from underground.

Electrically-operated signals to warn the hoistman of full bins were found to be sensitive to the atmospheric conditions experienced in the Gunnar head-frame during winter months, and this condition necessitated an extensive amount of maintenance. In order to safeguard in some measure against possible muck spillage from surface, a television camera was installed in the head-frame at the elevation of skip discharge, with a view range to include the chute system and the skip when in full-dump position.

The image screen is set in the hoist-room, giving the hoistman a view of the skip throughout its entire dumping cycle. From his position at the hoist controls, he is able to see the skip enter the dump plate and to follow its motion through to full-dump position, observing the course of skip discharge. When bins become full, the spoil level falls in the camera range well before any danger of a spill occurs.

To meet the need for precision which present day attention to detail demands, Ellis Optical Co. have designed and produced a high powered pocket microscope which has optically worked lenses and has a magnifying power of from 20 times up to 40 times. Magnification can be increased by extending the sliding tube and correct focusing is easily obtained by adjusting the knurled ring. The circle of field is approximately $\frac{1}{4}$ in.

Equipment Digest

Pyrene-Panorama Ltd. are now marketing 5 entirely new Kite-marked industrial safety helmets. Supplied in a variety of colours and manufactured in tough lightweight fibreglass, these new helmets increase the Panorama range to 7 safety helmets, all bearing the Kite-Mark (B.S.I. Licence No. 3171). The 5 new helmets are Peakguard, Truguard, Capguard, Brimguard, and Fulguard.

The U.S. Bureau of Mines has revised Schedule 2F as it applies to the use of trailing cables in underground coal mines. Under certain conditions, the new regulations will permit the use of trailing cables up to 1,000 ft. in length. No more than five temporary splices are permitted in such cables, however, and short-circuit protection is required. A table showing permissible lengths and other specifications for trailing cables in excess of 500 ft. may be obtained from the American Mining Congress, 1102 Ring Bldg., Washington 6, D.C.

A new power driven winch, capable of lifting a maximum load of 10 cwt., is now being produced by Henry Sykes Ltd., to meet the demand for a unit which possesses the maximum degree of strength, combined with the extremely sensitive degree of control demanded in many winching duties. This winch, known as the No. 3 size in the range of single barrel winches, is a small general purpose winch which will also operate an 8 cwt. drop hammer at 120 ft. per min. It uses a 6 in. dia. cast iron barrel with an effective length of 15 in. An alternative barrel of 12 in. effective length may, however, be fitted if required. Both diesel and petrol engine powered versions are produced. The overall length and width of both versions is 3 ft. 6 in., the height of the diesel version is 2 ft. 8 in. and that of the petrol version is 2 ft. 2 in. The diesel winch weighs 1,000 lb., and the petrol driven winch weighs 680 lb.

The Research and Development establishment of Griffin and George Ltd., has been overcoming the several obstacles to the provision of first-class balances at comparably reasonable cost. The new Griffin Duorider balance marks another step forward in this new approach to the design of general purpose balances with analytical features. To be used in flow systems as an on/off control where the maximum flow rate is 525 ml/min. at 60 cm. head of water, the Grundy solenoid valve, by the same manufacturers, is a cylindrical glass plunger, actuated by a concentric solenoid from a mains control unit. The glass valve has an overall length of 110 mm. and is cylindrical, being 70 mm. long by 16 mm. in dia., with rifled extensions to accommodate 5 mm. dia. tubing.

An important contribution to greater safety in the operation of boom cranes is made by the new forward electro-alarm warning system, a device manufactured in Fresno, California, and marketed by Thos. W. Ward Ltd. The alarm consists of three essential units working together; a sensitive detector projecting from the extreme end of the

crane boom; a warning horn mounted close to the crane operator; and a master control unit located in the cab. The device works from the starter battery or lighting circuit and is weather-proof and fool-proof. Accidents caused by the boom of a crane coming into contact with overhead power cables and similar hazards are dangerous and very expensive. This warning system enables the crane driver to avoid such accidents, and to prevent collision of the boom within a pre-determined distance up to 400 ft. The appropriate "danger distance" is pre-set by simple adjustment of the Master Control Unit. Supplied with a standard 58 ft. length of cable, the basic forward electro-alarm outfit weighs no more than 40 lb. in total.

A new low-loader traversing motor base has been designed by Industrial Drives Ltd., for use with their range of Sextet variable speed drives. In producing this base the manufacturers have aimed at economizing on three important aspects of machine design — space, weight and cost. The overall height of the base has been reduced by half, thus enabling complete drives to fit neatly into modern streamlined machines and to be installed in hitherto inaccessible spaces. The new Sextet operates with a smooth precise action throughout the full variable speed range. It offers several important advantages which give greater flexibility and improved performance to the complete variable speed drive, while at the same time effecting a saving in overall cost.

Blackwood Hodge announce the Euclid T S-14. The Little Twin, as this scraper is called, has a capacity of 14 yd. struck, and 296 h.p. The unit is equipped with separate torquatic drives, full power shifting, planetary final drives and direct drive lock up, no spin differentials, hydraulic controls, a low load bowl and offers the additional features of easy servicing and built-in accessibility.

Jeltekt Ltd. announce their range of protective clothing. The company's Standard range consists of protective clothing manufactured from PVC coated rayon. This range is stated to be impervious to wide changes of temperature and humidity, as well as providing protection against most alkalis, acids, greases and fats. The Duck-Dri range, made of PVC, provides a double strength waterproof garment of great tear resistance. The Neoprene range, made of neoprene-coated nylon material is used in the oil and chemical industries. The abrasion resistance is high. Hydrex nylon-based PVC coated fabrics resist a wide range of chemicals and possess marked strength and abrasion resistance.

Elcontrol have just re-issued Data Sheet TR describing their range of electronic process timers. This new issue includes a new high accuracy unit type TRU4. While basically similar to the standard TRU range of process timers, the circuit has been designed to give exceptionally high repetitive accuracy, i.e. better than ± 0.1 per cent under normal supply conditions.

MINING MISCELLANY

The Ghana Government has partially lifted its official boycott of South African goods by issuing permits for the purchase of thousands of pounds worth of essential mining machinery from the Union. South African exports of mining equipment to Ghana amounted to about £400,000 annually until the ban was imposed on August 1.

Minas del Dubra, of Spain, has applied for authorization to install an ilmenite washing plant at its Yago concession in the province of La Coruna, at an estimated cost of 67,900,000 pesetas.

Representatives of a Japanese concern interested in gold mining were recently reported to be making preliminary studies in the northern areas of the Department of Choco, Colombia.

The Sudan Geological Department has been examining areas of ultrabasic rocks in the Qala en Nahl region of Eastern Sudan as a possible source of chrysotile asbestos, reports *Mineral Trade Notes*. Tanganyika Concessions made a geological investigation of the area 30 years ago, but no development was reported. In several localities hill-side accumulations of talus show fairly

widespread occurrences of chrysotile in weathered serpentine. Although these are reported as short-fibre material, economic concentrations may be found in some areas. Large masses of talc-carbonate rock, which could be used as an industrial mineral, are also reported in the area.

The Ministry of Mines of Venezuela has announced that during recent surveys of mineral reserves in Andean regions near Lobatera, phosphates containing about 10 grammes of uranium oxide per ton were located from which it is technically possible to obtain uranium. So far most of the reserves have been used in fertilizer manufacture. Further research would determine the commercial value of the reserves, which contain 50 per cent calcium phosphate, 23 per cent calcium carbonate and other elements including manganese and iron.

The Angolan mineral concessionary concern, Companhia Miniera de Lobito, has signed a contract with the Fried. Krupp company of Essen, for the delivery of industrial equipment, including harbour and railway plant, worth some 1,300,000,000 escudos. This equipment is to enable the Angolan company to export 2,000,000 tonnes of iron ore and

200,000 tonnes of manganese ore during next year through the seaports of Lobito and Mocamedes. Another concessionary company, Lagos and Irmao, is to produce a further 1,000,000 tonnes of iron ore annually for shipping via Luanda. Further plans in Angola include exploitation of phosphate reserves at Cabinda and plants for producing pig-iron and aluminium.

President Tsiranana of Madagascar has signed a contract in Paris with the French Commission for Atomic Energy, granting them rights to prospect for uranium ores in western Madagascar. The Commission intends to spend about £360,000 on the prospecting scheme, and also plans to produce about 500 tonnes of uranium ore annually in south-eastern Madagascar.

Plans for exploration of Bolivian mineral reserves have been announced by Corporacion Minera de Bolivia, who will spend \$U.S.1,000,000 on the project.

Under an economic co-operation pact between Poland and Communist China, the Chinese authorities have put at Poland's disposal processes specially developed by them for alloying and processing copper and tungsten.

About £250,000 has been granted by Federal Germany to the United Arab Republic for use in mining and oil-producing projects, this being part of a total of nearly £2,250,000 granted under the German-Egyptian economic co-operation pact.

Some 3,000 Russian experts are stated to be working on the industrialization and mineral development of Eastern Siberia. According to the latest estimates, iron ore deposits capable of yielding 30-35,000,000 tonnes annually, and coal-fields with a potential annual yield of 70,000,000 tonnes, have been opened in the Krasnoyarsk area of Siberia alone.

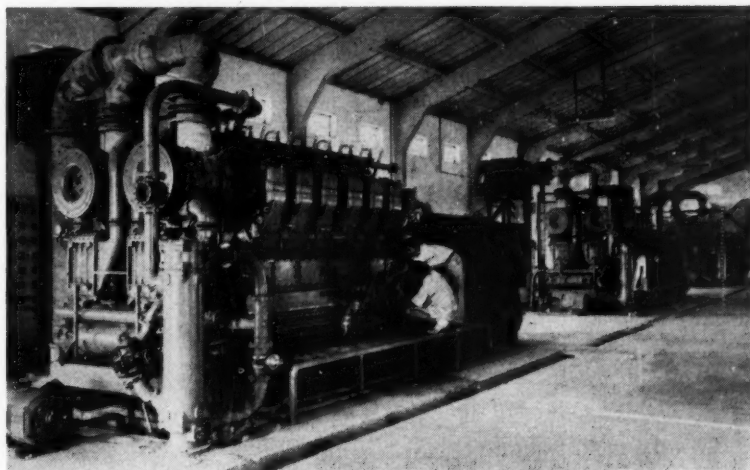
The U.S. Bureau of Mines has under study an intensified research programme for utilizing the U.S. great reserves of lignite. Subjects discussed at the initial meetings at the Grand Forks Lignite Research Laboratory, N.Dak., included the wider use of the fuel by electric power companies, as well as its uses in processing iron ore and in producing chemicals.

Prospecting for bauxite in an area of six miles in the Mokanj Hill, Sierra Leone, has been progressing with encouraging results. Recently a special exclusive prospecting licence for bauxite was granted by the government to a Swiss company, Aluminium-Industrie-Zurich.

The Norwegian state-owned company, Rana Gruber A/S, has prepared plans for the exploitation of the Dunderland iron ore pyrites deposits in Northern Norway, at an estimated cost of Kr.210,000,000 over six years.

More than 22 miles of a special plastic-coated steel pipe has been installed to carry natural gas through highly corrosive coalfield soil and swampland in Kentucky, U.S. It has obvious parallel applications in the mining industry. Despite the rugged terrain, the pipe, Republic Steel Corporation's X-Tru-Coat, was put in place at the rate of 6,600 ft. a day. The line was installed by the Cumberland Contracting Co., for Petroleum Exploration. The most corrosive agents along the route is the acid formed by rain and other moisture draining through piles of coal slag. The plastic coating will keep such corrosive agents and the steel pipe separated permanently and hence, reports the installer, is expected to reduce the cost and need for pipe replacement and maintenance. The pipe is 6½ in. in dia., and will operate at 350 lb. pressure per sq. in.





To supply standby power for pumping an opencast lignite mine near Madras, English Electric has equipped two movable substations for the Neyveli Lignite Corporation (Pvt.) Ltd., Madras. In the event of breakdown in the normal supply these substations start automatically and supply power on a ring main system to submersible pumps which keep the mine workings dry. Each substation houses three diesel-alternator sets and associated switchgear. The controls of each set are self-contained so that the substations can be moved completely as the face of the mine advances. The illustration shows diesel-alternator sets for the substations

The Ministry of Development of Ecuador has been authorized by a decree, issued by the previous government, to grant a contract to the *Compania de Exploraciones Arqueologicas y Mineras* for the exploitation of gold in certain regions of the Provinces of Imbabura and Pichincha.

The Venezuelan Mines Minister stated recently that potential deposits of bauxite in Venezuela were estimated at 104,700,000 tonnes, and that exploration for aluminium minerals would start early in 1961.

In 1959, coal production in Formosa amounted to 3,500,000 tonnes, and 1960 production is estimated at 3,750,000 tonnes, due to mine improvement projects sponsored by the ICA mission.

A shipment of 11,500 tons of copper concentrates from Mount Isa, valued at over £A5,000,000, will leave the port of Townsville in North Queensland, Australia, for Japan shortly. More than 80,000 tons of copper concentrates from the mine are expected to be moved through Townsville by next June.

The Bolivian Government has announced that it is sending an official trade mission to France, Germany, Britain, Holland, Czechoslovakia and Russia during the next month, to negotiate credits for the reconstruction of the Bolivian mining industry. The mission, to be led by Senor Chaves Ortiz, Minister for Mines, is also to "define the extent of the Russian offer on smelters for Bolivia."

Owing to the fall in iron ore demand caused by lower steel production, iron ore carriers on the Great Lakes of

North America plan one of the earliest season closings on record, the fleet being now down to 77 ships, about 33 per cent of the total, almost all of which are expected to be laid up shortly.

The Netherlands Government has submitted a Bill to Parliament designed to authorize the government to conclude an agreement, to be valid for 75 years, for a new Dutch company to prospect for iron, nickel, cobalt, chromium, manganese, platinum, gold and silver ores in Dutch New Guinea. The company would have American participation and would be established at The Hague. The firms involved in the creation of the new company are Oost Borneo Co. N.V. of Amsterdam, *Nederlandsche Handel Co.* of Amsterdam, W. H. Muller and Co., of Rotterdam, and the U.S. Steel Corp. of Pittsburg.

The provisional value of minerals produced this year in Northern Rhodesia was increased in September by £10,866,397 to £101,017,181. This figure is more than £6,000,000 greater than that for the corresponding period of 1959. When adjustments are made for a change in methods of valuation, this year's output now exceeds that in 1959 by over £12,000,000, and provided there is no serious curtailment in demand, will achieve a new high record.

The French non-ferrous metal mining and refining company, *Société Minière et Métallurgique de Penarroya*, in association with Ste. Krees (Paris), is to build an electrolytic zinc plant and a lead plant for the Metal Corporation of India. The contract was secured under the technical assistance, equipment and association agreement between India and France. Equipment for the plants and mines will be supplied by firms within

the Ste. Krees group, while Penarroya will be the technical adviser for the building and operating of the equipment.

The French Government announced that among 50 products, hitherto subject to a special licence, which are now exportable without restriction, are molybdenum, tungsten, antimony and zirconium ores, quicksilver, raw and worked silver, and certain chrome and tungsten alloys. At the same time, special licences are now required for exports of certain chemicals based on lithium and zirconium.

The South American Gold and Platinum Co. announces that its subsidiary, South American Placers, has successfully put into operation its gold dredge on the Kaka River in Bolivia, and plans to produce 6,000 oz. of gold per month at the present location.

Broken Hill Proprietary have agreed, on certain conditions, to establish a £32,000,000 steel industry at Kwinana, 20 miles south of Perth, Western Australia. The project depends on consent from the Federal Government to build a standard-gauge rail link between Kalgoorlie and Kwinana, at a cost of £A35,000,000. Mr. Harold Holt, Federal Treasurer, has stated that the government was considering a proposal to share the cost. This would be the fourth fully integrated steel works in the B.H.P., others being at Newcastle, Port Kembla and Whyalla. The State Government has agreed to grant the company the lease of the Koolyanobbing-Dowds Hill-Bungabin iron ore deposits, 232 miles east of Perth.

Italy has, since the war, developed a considerable industry employing vermiculite in various ways, particularly lightweight concrete fire protection and for thermal and acoustic insulation. A party of Italian exfoliators of vermiculite recently completed a brief work-study visit to the Balham research development unit of Mandoval Ltd., a London company under Rio Tinto Group management, to see the latest development work on vermiculite which is carried out there.

Plans for control by the Government of Mexico's zinc production include the erection of a zinc refining plant in the State of Quahuala, in northern Mexico, but it has not been disclosed whether this is to be a joint private and state venture, or to be financed by the state alone.

Negotiations have opened in Tokyo on the supply of Kuznetsk coking coal from U.S.S.R. to Japanese iron and steel firms. A Soviet proposal that Japan should import 500,000 tons of coal annually for the three-year period commencing with the 1961 financial year is apparently not acceptable to the Japanese steel firms, who expect to import in 1961 only about 30 per cent more than the total of 290,000 tons purchased in 1960.

Metals and Minerals

Two Major Aluminium Projects Announced

This week has brought announcements of two major aluminium projects whose impact on the economic, and indeed the political, development of the Commonwealth can scarcely be over-estimated.

In Ghana's plans for economic expansion the highest priority has always been accorded to the Volta scheme and Dr. Nkrumah has done everything in his power to bring it to finality. His efforts have finally been crowned with success, for an announcement from President Nkrumah's office states that, subject to the conclusion of satisfactory financing arrangements, the Anglo-U.S.-Canadian consortium, Valco, set up by Kaiser Industries of the U.S. in September, 1959, has agreed to build the aluminium smelter, which will be an integral part of the Volta scheme, at an estimated initial cost of about £57,000,000. Mr. Edgar Kaiser, of Kaiser Aluminium, initialled the final agreement before leaving Accra to consult the principal companies and arrange for the final signing. The present members of the consortium are Kaiser, Alcan, Alcoa, Olin Mathieson and Reynolds. British Aluminium has been approached and it is considered possible that this company may also decide to participate.

The Ghana Government announced in August that it had obtained assurances of loans totalling £30,000,000 from the World Bank, the U.S. and the British Governments for the Volta River hydro-electric project, involving the construction of a power house and dam at Akosombo, 60 miles N.W. of Accra. The loans, however, were conditional on a satisfactory agreement being reached with Valco for the aluminium smelter, which would be the biggest consumer of power from Akosombo. Discussions are in progress between the Ghana Government, Valco and World Bank representatives, but agreement has yet to be reached on financial details. One stumbling block is reported to be the price of hydroelectric power to the smelter, the figure considered reasonable by Ghana not being regarded as attractive by the aluminium interests.

It seems hardly likely, however, that any financial difficulties remaining will not be ironed out, particularly in view of the desirability, for obvious reasons, that a scheme of such importance to Ghana's economy should be financed, if at all possible, from Western sources.

Soon after the news from Ghana came an announcement by Mr. Walter Nash, the Prime Minister of New Zealand, that Australian Consolidated Zinc Pty. Ltd. had decided to establish an aluminium smelter in the Southland province (see our issues of January 15, 1960, p. 61 and January 22, 1960, p. 91). The project is expected to bring £160,000,000 capital to New Zealand. It will use bauxite from Queensland, Australia, and when fully productive is expected to equal the combined production of France and Norway.

The abundance of cheap power available from the Manapouri and Teanau Lakes was reported to be the deciding factor in the choice of New Zealand for the smelter. The agreement provides that, within the next ten years, Consolidated Zinc must construct a power station capable of producing for 24 hours a day at least 100,000 kW.—equal

to the combined peak load output of the two largest North Island hydro-stations. Within 20 years output must be raised to the full potential of more than 600,000 kW. continuously.

It has been further announced that bauxite mining rights in North Auckland have been given to Australian Consolidated Zinc Pty. Ltd. Mr. Frederick Hackett, the New Zealand Minister of Mines, said the government have already ascertained that North Auckland was a likely rich source of bauxite, and he added that advanced field research would start shortly.

Offers of Russian virgin aluminium are reported to have become more plentiful in the U.K. On a delivered buyer's works basis a price of about £180 a ton is indicated. Offers from Spain and Poland have also been reported. However, since the U.K.'s requirements continue to be largely met by the regular suppliers (chiefly Canada, the U.S. and, to a much lesser extent, Norway), outlets for metal from the other sources may be difficult to find.

According to the Bureau of Non-Ferrous Metals Statistics, U.K. imports of virgin aluminium from Canada in the period January-September, 1960, totalled 119,091 l.tons, from the U.S. 83,285 tons, from Norway 24,985 tons, and from Russia only 2,427 tons. Total imports from all sources over January-September at 240,413 tons have already nearly overtaken imports for the whole of last year at 252,145 tons. Imports from the U.S. are already nearly double the total 1959 arrivals.

JAPAN BUYS SWAZILAND ORE

Swaziland's iron ore resources were described in our issue of August 26, p. 228, when we reported that negotiations were proceeding in London regarding the opening up of the deposits at Bomvu Ridge and the construction of a railway line to link the deposits with Portuguese East Africa. The double project, it was stated, would probably involve a total investment of about £12,000,000. The prospecting concession for the Bomvu Ridge deposits is held by Anglo American's subsidiary, the Swaziland Iron Ore Development Co.

It has now been reported that a deal amounting to a total of £42,000,000 is on the point of being finalized between Anglo American and Guest Keen and Nettlefold on the one hand and a Japanese group representing the Yawata and Fuji iron and steel companies on the other for the supply of 1,200,000 tons of iron ore annually from the Bomvu Ridge deposits. The project involves the construction at a cost of £3,000,000-£4,000,000 of a plant to mine three areas of deposits, as well as the construction of the railway link with Lourenco Marques via the existing railhead at Goba. The Japanese syndicate in which the Mitsui and Kinoshita groups have a 20 per cent interest, will pay £4,200,000 annually for the ore, the projected contract price being 70s. per dry l.ton f.o.b. Lourenco Marques for ore with an iron content of 65 per cent, Anglo American being responsible for

the rail freight. The first deliveries are due in 1964.

The construction of the railway will be financed mainly by the U.K. Government, but loans from the World Bank or the International Development Association may be obtained. The report states that negotiations are currently proceeding in London, both for financing the rail construction and for fixing freight rates.

HIGHER CADMIUM PRICE

The Commonwealth and U.K. price for domestically-produced cadmium has been raised to 11s. per lb. delivered U.K. from 10s. 6d., with immediate effect. The price last changed in March of this year, when it was raised from 10s to 10s. 6d.

The latest increase brings the domestic price into line with the recently prevailing price of 11s. for foreign metal, and is thought to be a belated adjustment to the rise in the U.S. price a few weeks ago (*vide* our issue of October 7, p. 393).

Consumption remains good, amounting over the period Jan.-Sept., 1960, according to the British Bureau of Non-Ferrous Metal Statistics, to 1,014.95 l.tons. This compares with 1,257.20 tons consumed in all 1959. In 1957 U.K. offtake was 962.45 tons. The use of cadmium in plating and colours continues to be brisk.

GERMANIUM IN EAST GERMANY

It is reported from East Germany that production of germanium on a commercial scale will be started this year at VEB Spurenmetal,le, Freiberg, the country's only specialized plant for the production of semi-conductor materials, and that by the end of 1961 output will be at the rate of 1,150 kg. annually.

VEB Spurenmetal,le has been producing germanium dioxide on an experimental scale for about two years, using as the starting material flue-dust from the Wilhelm Pieck metallurgical combine, at Mansfeld. A team of British fitters is at present engaged on the installation of reduction furnaces supplied by a U.K. firm, and the works will soon be equipped with the most up-to-date plant for the commercial extraction of germanium and also indium. The process to be employed has been developed jointly by VEB Spurenmetal,le and the Freiburg Research Institute for Non-Ferrous Metals. An attempt is currently being made to double the output of germanium oxide without extending the plant; should this prove successful, the annual output of pure germanium will be raised to 2,500 kg. by 1965. As from next year, silicon will also be produced.

SELENIUM IN THE THIRD QUARTER

U.S. domestic production of selenium and selenium compounds in the third quarter of 1960 amounted to 133,053 lb. of contained selenium, according to reports received from selenium producers by the Bureau of Mines, U.S. Depart-

ment of the Interior. The output was 25 per cent lower than the second quarter's production of 177,946 lb. Shipments in the third quarter totalled 144,983 lb. of contained selenium, compared with 188,771 lb. shipped in the previous quarter.

Imports of selenium and selenium salts for consumption during two months of the third quarter of 1960 amounted to 17,458 lb., exclusive of 4,137 lb. of selenium contained in concentrates imported from Rhodesia-Nysaland. The entire quantity imported during the period was supplied by Canada, with the exception of 22 lb. from West Germany.

U.S. FLUORSPAR STATISTICS

U.S. domestic production of crude fluorspar ore in the second quarter of 1960 totalled 127,400 s.tons and mills processed 135,300 tons from which 50,100 tons of finished fluorspar was recovered. Total production of finished fluorspar was 53,600 tons, which included almost 3,500 tons of material marketable as mined. Finished fluorspar shipped amounted to 59,800 tons valued at \$2,577,300, according to reports of producers to the Bureau of Mines, U.S. Department of the Interior.

Imports for consumption during the

second quarter rose to 144,226 s.tons from 111,636 tons in the previous three months. Consumption, however, declined from 177,039 to 155,131 tons and was slightly below that of the corresponding period of 1959. Approximately 4.6 lb. of fluorspar was consumed per s.ton of steel produced at plants consuming fluorspar in the second quarter. At the end of the quarter industry stocks amounted to 190,548 s.tons, compared with 187,970 tons at the end of the second quarter and with 201,188 tons at the end of 1959.

STOCKPILES AGAINST SOVIET DEMANDS

In his address to the Rhodesian Economic Society on October 11, Sir Ronald Prain confirmed the estimates of world copper production and consumption that he gave to the New York Mining Club in 1959 (*M.J.* February 20, 1959). He anticipates that annual Free World consumption of primary and secondary copper will increase from the present 4,100,000 tons to some 5,200,000 by 1965 and to 6,500,000 tons by 1970. Against this the present production, together with secondary metal is expected to increase from 4,500,000 tons to 5,200,000 tons by 1965. Thereafter it

will be necessary to increase the production capacity to meet the consumption anticipated in the latter half of the decade.

Of particular interest in this, the latest of Sir Ronald's periodic surveys, is the inclusion of the Soviet Zone for the first time. It assumes that the present net consumption of the Soviet Zone from the Free World is 150,000 tons and it anticipates that this net demand will decrease to a little below 100,000 tons by 1970. The paucity of information regarding the actual rate of growth of production and consumption behind the Iron Curtain is such that these projections must, we imagine, still be very tentative but they do serve at this time to underline the effect that Soviet demand could have on the Free World markets.

What does seem certain is that net Soviet imports will continue for many years to make a substantial, if erratic, demand on the uncommitted supplies of the Free World which always are only a small proportion of total production, and this seems to us to be one of the strongest arguments for the producers to build up stocks in Europe as a stabilizing influence on prices. The present period of generally reduced sales offers an ideal opportunity to establish these stocks before cutting back on production.

COPPER • TIN • LEAD • ZINC

(From Our London Metal Exchange Correspondent)

Interest has once more centred on the copper market where activity has remained at a high level and the firmer undertone has been maintained. The other three markets have not followed to any extent. Indeed, the firmer undertone reported last week appears to have disappeared and some experts expect a slight decline before the upward movement is recommenced.

COPPER STILL FIRM

The activity in the copper market has been backed by an increasing demand from consumers in Europe and behind the Iron Curtain and this, combined with a widening in the backwardation, has caused the price level to move upwards. The underlying technical strength of the market is indicated by the fact of this increase in the backwardation, in spite of an increase in stocks at the beginning of the week of 1,114 tons to a total of 12,322 tons. A certain amount of bear covering has also been in evidence but there is still a distinct possibility that the technical position alone is sufficient to maintain prices up till the end of the year.

In the U.S. copper remains in oversupply and some small tonnages are reported to have changed hands at below 29½ c. per lb. in contrast to the plenty of new metal in the scarcity of scrap and in fact during the week the custom smelters' intake price for No. 2 scrap was raised to 23.50 c. per lb. All reports, however, show that consumer interest is unsatisfactory and it seems fairly certain that as soon as the European picture shows signs of weakening there will be a downward adjustment in the custom smelters' quotation.

The situation in Chile remains uncertain with negotiations proceeding for a new labour contract at El Teniente and at the moment opinion is divided almost 50/50 on the likelihood of a strike on January 1. The results of the Chuquicamata strike were apparent in the figures for the October production of the big mining companies which totalled only 23,646 tons as compared with 42,550 tons in September.

U.S. TIN STOCKS THE KEY

The tin market in London remains fairly steady in spite of a decline in Singapore but in this market production and consumption are very evenly balanced with the latter probably being the greater, the difference being met by de-stocking in the U.S. As soon as this stops the market should turn upwards quite sharply, more especially so as consumer interest in Europe is once again on the increase.

In the U.K. stocks showed no change at the beginning of the week and the backwardation remains constant underlining the fact that the majority of such stocks must be in the hands of the buffer stock manager and, therefore, frozen until the price reaches £830 per ton.

On Thursday the Eastern price was equivalent to £799½ per ton c.i.f. Europe.

LEAD EASIER, ZINC FIRM

The zinc position is somewhat better, featureless with the price of the former tending to decrease, whilst that of the

latter is tending to rise. Demand for lead is again classified as "spotty" and it seems possible that further arrivals of European lead may depress the market while it is being digested.

The zinc position is somewhat better, being helped by the lower production in the U.S. which at 30,200 s.tons for September was the lowest for twelve months.

★

The British Bureau of Non-ferrous Metals Statistics (in tons) for September are as follows (August figures in parentheses):—

| Consumption of | | | |
|---------------------|-----|---------|-----------|
| copper | ... | 65,748 | (49,100) |
| End of month stocks | ... | 110,300 | (110,594) |
| Lead usage | ... | 34,274 | (28,735) |
| End of month stocks | ... | 58,157 | (59,595) |
| Offtake of zinc | ... | 33,163 | (25,764) |
| End of month stocks | ... | 52,717 | (53,584) |
| Usage of Tin | ... | 1,983 | (1,696) |
| End of month stocks | ... | 11,550 | (11,771) |

Closing prices are as follows:

| | November 17 | | November 24 | |
|-----------------|----------------|-------|----------------|-------|
| | Buyers Sellers | | Buyers Sellers | |
| COPPER | | | | |
| Cash | £225½ | £225½ | £228½ | £228½ |
| Three months .. | £224½ | £225 | £226½ | £226½ |
| Settlement .. | £225½ | | £228½ | |
| Week's turnover | 14,500 tons | | 12,900 tons | |
| LEAD | | | | |
| Current ½ month | £67½ | £68 | £67½ | £67½ |
| Three months .. | £68½ | £68½ | £68½ | £68½ |
| Week's turnover | 7,600 tons | | 5,450 tons | |
| TIN | | | | |
| Cash | £802 | £802½ | £801 | £801½ |
| Three months .. | £798 | £799 | £798 | £798½ |
| Settlement .. | £802½ | | £801½ | |
| Week's turnover | 535 tons | | 435 tons | |
| ZINC | | | | |
| Current ½ month | £86½ | £86½ | £87½ | £87½ |
| Three months .. | £86½ | £86½ | £86½ | £87 |
| Week's turnover | 7,175 tons | | 4,925 tons | |

London Metal and Ore Prices appear on inside back cover.

Mining Finance

Sir Ronald Prain's Views on Copper

Three main points emerge from the annual and September quarterly reports of the Rhodesian Selection Trust group and from the accompanying statement by the chairman, Sir Ronald Prain. (The main features of the results for mines in the group, the year to last June, together with those of the Rhodesian Anglo American group, discussed here last week, are summarised in the table.)

The first point is Sir Ronald's faith in the long-term future of copper. He says with reference to the 10 per cent production cutback already announced that situations in which such reductions are necessary owing to an excess of supply over demand must be expected from time to time. The cutback "does not signify any basic change in the long-term outlook for copper. Our development plans continue unchanged". Chief of these is the expansion at the Mufulira mine's Mufulira West section aimed at adding approximately 50 per cent to this property's capacity by mid-1962. In the year to June last Mufulira produced a record 103,153 tons of copper.

Sir Ronald's second point concerns one of his favourite topics, the possibility of a price for Rhodesian copper fixed by the producers although he adds that this would not necessarily mean the elimination of the London Metal Exchange as a useful pricing medium in the market. Sir Ronald

OPERATING RESULTS OF COPPERBELT COMPANIES

| Company | Year to June 30 | Copper Sales (£000) | Depreciation (£000) | Taxation (£000) | Net Profit after Tax (£000) | Transfers to Reserve (£000) | Gross Divs. per ord. share s. d. |
|-----------------|-----------------|---------------------|---------------------|-----------------|-----------------------------|-----------------------------|----------------------------------|
| R.S.T. | | | | | | | |
| R. Antelope | 1959 | 17,698 | 1,100 | 1,910 | 2,949 | 1,350 | 10 |
| | 1960 | 22,309 | 1,200 | 2,740 | 4,112 | 1,500 | 1 3 |
| Mufulira | 1959 | 19,995 | 1,200 | 2,410 | 3,964 | 1,300 | 5 6 |
| | 1960 | 25,633 | 1,000 | 3,300 | 5,654 | 1,600 | 7 10½ |
| Chibuluma | 1959 | 4,138 | 200 | — | 1,145 | 1,150 | — |
| | 1960 | 5,386 | 250 | — | 1,734 | 1,725 | — |
| Rhoanglo | | | | | | | |
| Nchanga | 1959* | 24,906 | 1,290 | 3,130 | 4,705 | 729 | 5 0 |
| | 1960* | 42,623 | — | 7,780 | 13,644 | 1,500 | 11 2 |
| Rhokana | 1959 | 17,943 | 526 | 2,090 | 5,625 | 508 | 6 5 |
| | 1960 | 27,689 | — | 3,930 | 11,534 | 758 | 11 2 |
| Bancroft | 1959 | 2,389 | — | — | 106 | — | — |
| | 1960 | 11,292 | — | — | 3,693 | — | 1 7 |

* Year to March 31.

has, of course, already tried a fixed price policy for his own R.S.T. group, but abandoned it.

He now thinks that consumers are coming to have a much greater understanding of some of the problems of the raw material producers and in particular of the problems which can arise in certain parts of the world which are closely linked with Europe in the event of unduly great swings in prices.

The average price received by the group

for its copper in the year to June was £246 a ton. The London Metal Exchange price during the period fluctuated between £209 10s. and £279 10s. which, Sir Ronald thinks, is the kind of variation over twelve months that can be "harmful and unsettling to the industry". This brings us to our third point, namely, the falling off in copper mine earnings that is taking place during the current financial year. In the September quarter Mufulira obtained an average of £245.5 for its sales and Roan £241.3. Since the end of the quarter the London cash price has moved between £219 and the present level of £230. And as from the beginning of October the 10 per cent output reduction will have been taking effect.

So a further falling away of earnings in the present quarter looks to be inevitable. In the September quarter Mufulira's untaxed surplus was £2,244,000 against £2,404,000 in the June quarter and £1,906,000 in the September quarter of 1959. Roan's was £1,507,000 against £2,182,000 and £1,246,000, respectively. Both concerns can thus stand further considerable declines in earnings before getting back to the 1958-59 level. In that year Mufulira's operating surplus was £6,400,000 and Roan's £4,800,000.

Other noteworthy points from the R.S.T. group reports are that during the current year to next June the Ndola refinery is expected to treat all Roan's output and its total throughput may exceed 80,000 tons. Also, it is hoped that the baby of the group, Chibuluma, will have reduced its £5,000,000 loan from the United States Government to no more than £400,000 to £500,000 by June 30 next. This concern is finding the outlook for its cobalt sales an obscure one, but Sir Ronald Prain states that certain arrangements have been entered into which should provide the group, at least for a year or two, with a market for its cobalt after deliveries to the United States Government have been finished.

Sir Ronald Prain's statement appears on page 608.

WEST WIT'S FINANCE PLANS

In his annual statement the chairman of West Witwatersrand Areas, Dr. W. J. Busschau, refers to the reduction in the company's cash resources resulting from the participation in the fresh financing operation for Free State Saaiplaas, the O.F.S. developing mine. The company will

LONDON MARKET HIGHLIGHTS

The Johannesburg market was closed on Monday of this week for its move into the new building on Hollard Street, and such is the dominance of the Cape in Kaffirs these days that nobody was surprised when Monday's gold share dealings in London all but dried up.

Reopening of the Johannesburg market failed to bring any expansion of activity on Tuesday and Wednesday. In listless conditions share prices edged lower; selling was slight, but there were few buyers to counterbalance it.

Dullness was particularly noticeable in the uranium stocks. Older producers, which are almost entirely dependent on uranium earnings turned easier when the current talks on the future of South Africa's uranium industry focused attention on the fact that some of mine contracts have not long to run. Randfontein, for instance, whose contract expires in 1964, came back 2s. to 15s. 6d.; the fall occurred despite the fact that the shares will have interesting "break-up" possibilities if the mine closes down when its contract runs out.

Younger uranium producers were also out of favour. Some general uneasiness followed the Buffelsfontein plan for a seven-year gold expansion programme designed to offset the mine's loss of income which will occur when the uranium contractual obligations are filled in 1967. The capital spending involved will mean a seven-year dividend freeze for Buffels and as a result the shares were lowered 2s. 6d. to 45s. 9d. In sympathy, Vaal Reef's lost 1s. 3d. to 45s. 7½d. and Hartebeest eased 9d. to 52s. 9d.

In Diamonds, De Beers drooped to

15½s. 3d. in line with the dullness of Kaffirs, but "Casts" hardened further to 26s. 4½d. in response to the recent scrip issue news.

A rather firmer start to the week was made by the Copper group, sentiment being impressed by the confident tone of Sir Ronald Prain's review with the R.S.T. group reports and also by firmness in the metal price. But there was little follow-through to the movement and prices were again tending to soften by mid-week.

Desultory sales, often from Singapore, produced scattered losses in Tin shares despite estimates that metal consumption may now have passed productive capacity. Ayer Hitam came under some pressure from the East and lost 1s. to 22s. 9d.

Easily the brightest section of mining markets was the Australian base-metal group. Previously, share prices had fallen on consideration of the Commonwealth's economic problems, but a rally began on Friday which gathered strength on Monday and Tuesday. The sharpness of the recovery owed a great deal to the disclosure of a shortage of stock in some cases, particularly in Consolidated Zinc which in four business days spurted 7s. 3d. to 68s. 6d. Mount Isa (48s.) also more than regained the previous setback and there was a steady inquiry for New Broken Hill (43s.).

Elsewhere, Trepca improved to 5s. 9½d. following news of the proposed liquidation distribution in January of not less than 6s. 4d. per unit which depends upon there being no further legal complications. Another firm spot was Natal Navigation Collieries, 2s. 6d. up at 63s. 1½d., after the one-for-one scrip issue news.

in due course have to put up more funds for Western Deep and Western Areas, participate in the cost of the "Western Areas No. 2 Prospect" and finance its own further drilling programme. But West Wit has decided against raising new equity capital. Instead it is to meet its needs out of profits and from the issue of a £500,000 debenture to the National Finance Corporation of South Africa.

West Wit expects "a rising stream of dividends" and Dr. Busschau thinks that it should be feasible during the next few years to provide for the repayment of these debentures and still to "make further improvements" in the company's dividend rate which was 3s. 9d. in the year to last June. West Wit 2s. 6d. shares are 68s. 9d.

Dr. Busschau refers to the increased rate at which gold is being extracted from the ground in South Africa and stresses the need for new mining areas if future output is to be maintained or increased. West Wit is certainly playing its full part in this search. The encouraging reef strike to the east of the Libanon mine was commented on here on November 11. In connection with this discovery the chairman says that, together with information from neighbouring mines, it indicates that a large area to the south-east of Libanon is underlain by Ventersdorp Contact reef at mineable depth. Further drilling is being planned to determine the full extent of this reef-bearing ground and its economic potentialities.

Finally, Dr. Busschau pleads with the South African Government for a reduction in the "unnecessarily heavy burden of the discriminatory rate of gold mining taxation". He points out that capital for the Union is now difficult to raise from abroad. It is thus all the more necessary that companies such as West Wit should be able to provide from net income the necessary funds in order that the country's resources should be developed to the fullest extent.

Dr. W. J. Busschau's statement appears on page 611.

REVISION OF URANIUM CONTRACTS?

Discussions have been resumed in South Africa between the South African Atomic Energy Board and representatives of the Combined Development Agency which is the joint purchasing agency of the Atomic Energy Commission in the U.S. and the Atomic Energy Authority in the U.K. There have been talks between these parties before about various questions affecting the South African uranium contracts the first of which, those of Daggafontein and Western Reefs, are due to expire at the end of 1963.

From remarks made by Dr. T. E. W. Schumann, deputy chairman of the South African A.E.B., it looks as though, whereas in the past the talks have not resulted in any changes in the contracts, the present ones may conceivably lead to some kind of revision "in order (if feasible) to meet more closely the present specific needs of the contracting parties". And one of these needs, of course, from the U.K. and U.S. viewpoint is to damp down the too plentiful supplies of uranium. On the other hand, South Africa, with her present adverse balance of payments, is unlikely to want to agree to any revision which would reduce current earnings from her uranium exports.

BUFFELS TAKES EVASIVE ACTION

Most of the South African uranium producers fall into a very different category from the Canadians because uranium is only a sideline to profitable gold pro-

duction. The lines along which the newer producers are thinking in this respect have been illustrated this week by an announcement from Buffelsfontein the Klerksdorp area producer. It came in the annual report and begins by saying that the company's uranium contract expires in June, 1967, at the latest—it could possibly be terminated six months earlier—and there will then "almost certainly be a drastic reduction in the volume of uranium sales".

To ward off "as far as possible" the effect on profits of such an eventuality Buffels proposes to embark on a 7-year programme designed to raise the mine's gold revenue at a cost of some £15,000,000. At first sight this looks to be a big price to pay, but it represents, in fact, only £2,250,000 per annum and the chairman of Buffels, Mr. Jack Scott, thinks that the mine's profits should increase sufficiently to enable this to be met out of profits while maintaining a 3s. 6d. dividend rate. For 1959-60 the payment was slightly higher than this at 3s. 7½d. The proposed capital expenditure would also, he points out, provide hoisting and ventilation facilities to cover the next 25 years.

The scheme includes twin shafts near the eastern boundary, which should be commissioned by 1964, and three sub-vertical shafts to provide access to the deeper levels below the 5,000 ft. horizon. The mill rate envisaged is 180,000 tons a month which compares with the 148,000 tons put through in October. Buffels fell to 43s. 3d. on the news at which the yield on a 3s. 6d. basis is 8.1 per cent. This is quite a reasonable return, but what influenced the market was the fact that Buffels' growth possibilities as a young and expanding mine have now been stunted from a dividend viewpoint for a long time to come.

Chairman's statement on page 613.

GOLD FIELDS' BALANCE SHEET

The Consolidated Gold Fields report for the year to June 30 last reflects the several acquisitions of other mining finance houses made during the period. Thus the group's quoted investments have risen by just over £6,000,000 to £20,486,151, but, reflecting presumably the setback in the Kaffir market during the first half of 1960, the Stock Exchange value is barely £3,000,000 higher at £38,639,338. The net asset value calculated from the group balance sheet works out at 94s. per £1 Ordinary share on the issued capital of £9,477,628 which was the figure at which it stood on October 27 when as a result of further conversions the Loan Stock had been reduced to only £160,168. The current price of Gold Fields is 71s. 6d. ex dividend to yield just on 7 per cent on the 5s. paid for 1959-60.

The equivalent price ex the proposed one for ten fully-paid share distribution would be 65s. raising the potential yield to 7.7 per cent presuming the dividend can be maintained on the higher capital. There should be quite a good chance of this proving possible because 1960-61 will mark the first full year of benefits from last year's acquisitions. Mr. Robert Annan should have an interesting speech to make at the meeting on December 15. It will be a farewell performance. At the end of 1960 he becomes president of the company, his place as chairman being taken by Sir G. S. Harvie-Watt.

MESSINA STILL EXPANDING

The results of Messina (Transvaal) Development for the year to September 30 were regarded as a little disappointing

after the brilliance of the Northern Rhodesian copper results for the year to June. Ignoring the income received from the Mangula subsidiary Messina's own gross mining profit appears to have risen from £1,097,800 to £1,386,000. The young and growing Mangula mine in Southern Rhodesia brought in £462,900 by way of dividends compared with £145,200 in the previous year. Messina also made a capital profit of £160,000 (against £457,200) from sale of investments, presumably further realisations of Mangula shares.

Messina's own dividend is brought up to 2s. 2½d. per 5s. stock unit with a final of 1s. 2½d. whereas some optimists in the market had been going for 1s. 6d. Reserves get £500,000 against £650,000 in 1958-59. The dividend absorbs £1,083,500 and, if capital profits are ignored, it is covered by an available profit of £1,480,900.

As a group, Messina is still in a phase of expansion with a new copper refinery due to start up. This is designed not only to treat Mangula ore with a consequent saving of costs, but also ore from the new Alaska mine in Southern Rhodesia which should be adding to the current year's group earnings. These factors should go quite a way towards staving off the effect on Messina's earnings of the lower copper price. The units are 18s. cum dividend to yield 12½ per cent before double tax relief.

CORONATION'S STEADY RECORD

Coronation Syndicate maintains its steady dividend record. The bulk of the group profit comes from the Southern Rhodesian gold mines Muriel and Arcturus. In the year to June these produced £245,357 out of a total revenue of £262,040. The dividend of 7d. per 2s. 6d. share, paid for the third year running, involved a distribution of £93,917 out of a net profit of £139,500. Once again £40,000 is put to general reserve.

In his statement with the report the chairman, Mr. S. F. Dench, does not venture any opinion about the outlook. Shareholders would no doubt welcome some indication of the life prospects for the mines. Any rise in the gold price could make quite a difference to the company's gold mines.

It is worth noting that since the end of the financial year the Riversdale anthracite venture which has not proved a success has been disposed of to Natal Ammonium Collieries (1946) in exchange for shares in that concern. It is hoped that beneficial results will accrue from the amalgamation of the two companies' trade.

Coronation stand at 5s. to yield 11.7 per cent.

Chairman's statement on page 610.

ANGLO-RAND'S POTENTIAL

The main hope for Anglo-Rand Mining & Finance has latterly lain in the success with which its participation rights could be turned to account, more especially in the Kinross area with which this investment company is primarily identified. In this field Anglo-Rand holds shares in Winkelhaak, Bracken and Leslie as well as a further interest in Leslie through its substantial interest in Beatrice Gold Mining Company. In addition, since the close of the last financial year on June 30, Anglo-Rand has obtained participation rights in a further area in the Kinross district to the north of the Leslie property. Elsewhere Anglo-Rand's most promising interest is in Wes-

(Continued on page 614)

RHODESIAN SELECTION TRUST GROUP OF COMPANIES

Companies in the Group are incorporated in either Northern Rhodesia, Southern Rhodesia or Bechuanaland

The following is an abridgment of the Statement dated October 22, 1960, by the Chairman, Sir Ronald L. Prain, O.B.E., which has been circulated to members.

Production of copper from the group's three mines during the year which ended on June 30 last was the highest yet recorded. The output of copper was 217,548 tons, of which 216,576 tons were sold for an aggregate sales value of £53,328,539. These operations yielded a total profit of approximately £20 million before making reserves or allowing for taxation.

The group's production represents about 7 per cent of the free world's output of primary copper. The following table shows how this production was made up:—

| | long tons |
|----------------------|-----------|
| Mufulira | 103,153 |
| Roan Antelope | 92,341 |
| Chibuluma | 22,054 |
| Total | 217,548 |

These results were achieved principally as a result of continuous production for the whole 12 months and a copper price which was satisfactory.

Unfortunately, these successful results were obtained against a background of rising political tension in southern Africa.

Ore Reserves

The published ore reserves of the group at June 30, 1960, are as shown below:—

| | short tons | Grade per cent total copper | per cent cobalt |
|---------------------------|-------------|---|-----------------------|
| Mufulira | 178,769,000 | 3.35 | — |
| Roan Antelope | 94,592,000 | 3.04 | — |
| Chibuluma | 9,790,000 | 4.89 | 0.18 |
| Baluba | — | — | — |
| (undeveloped) 112,000,000 | 2.41 | 0.16 | — |
| Chambishi | — | — | — |
| (undeveloped) 35,000,000 | 3.37 | — | — |
| Total 430,151,000 | | | |

The Copper Market

The copper market was steady and even strong at times throughout the financial year under review. Various influences contributed to this, including a prolonged strike in the United States mines which occurred during the latter part of 1959 and early in 1960, and anxiety over political events in Africa. In addition, the market was influenced from time to time by fears about stoppages of work elsewhere, and by certain technical features which operated to maintain the price.

Generally speaking, consumer demand in Europe was particularly strong while in America the reverse was the case.

However, since the resumption of work at the United States mines there has been a steadily growing disequilibrium between production and consumption of primary copper in the free world. This has been less due to falling off in consumption than to steadily increasing production, including the bringing in of certain new mines. Since April this year this position has become more apparent,

and producer stocks have risen to the highest level since August, 1958. During the past four months copper prices have tended to reflect this position of over-supply and, in recognition of this underlying situation, certain mines, including the mines in this group, recently announced cuts in production which, in our case, are at the rate of 10 per cent per annum. Shareholders who have read my reports in recent years will know that I regard this as the most realistic method of correcting a position of over-supply.

It follows therefore that until further notice our operations will be on a curtailed basis. Such a situation is to be expected from time to time, and does not signify any basic change in the long-term outlook for copper. Our development plans continue unchanged.

Copper Prices and Supplies

The average price we received for all our copper during the year was £246 per long ton. During the financial year the price of copper on the London Metal Exchange fluctuated between £279 10s. per ton and £209 10s. per ton. While a tribute should be paid to the behaviour of the London Metal Exchange prices, in the sense that there were no violent daily fluctuations, it remains nevertheless the opinion of many that a variation of this sort in a 12-months period is one which is harmful and unsettling to the industry. Producers are by no means complacent about this state of affairs and are constantly considering how a greater degree of stability can be introduced into the copper market. To this end the philosophy of cutting production and/or sales in the event of over-supply seems to be increasingly accepted in the industry. Other points which continue to receive the attention of producers include the question of a more enlightened policy of stock retention in the various markets of the world, combined with the possibility of selling at fixed prices which would not necessarily mean the elimination of the London Metal Exchange as a useful pricing medium in the market.

If producers are more aware of the importance of these policies on the course of prices for their main product, it is also true that fabricators now appear to have a much greater understanding of some of the problems of raw material producers and, in particular, of the problems which can arise in certain parts of the world which are closely linked with Europe, in the event of unduly great swings in prices.

This increased appreciation on the part of the consuming industry of the importance of stability is one of the most encouraging features of recent years and part of the credit for this may be given to the deliberations of the International Wrought Non-Ferrous Metals Council at which producers and fabricators regularly meet to try to get a better understanding of each others' problems.

One of the notable features of the year has been a decision on the part of many producers to increase greatly the amounts to be spent on research and promotion in the use of copper, and the setting up

on both sides of the Atlantic of new agencies to carry out these programmes. These moves are long overdue and will play a most important part in the growth of the copper industry. The companies in this group wholeheartedly support these developments.

ROAN ANTELOPE COPPER MINES

Production and Costs

Production of ore was 6.66 million tons which compares with the figure of 5.55 million tons for the previous year. The grade of ore milled was 1.85 per cent compared with 1.97 per cent in the previous year.

Costs rose from £154 per long ton of copper produced in the previous year to £159 per ton in the year under review. This was mainly due to an increase in the cost of bonus scheme payments to employees, which are based on profits of the Copperbelt as a whole.

In addition, a greater proportion of the mine's output was refined as electrolytic copper and a smaller proportion produced as fire refining grade copper. The production in terms of all grades of copper was 92,341 long tons, a record for this mine. Production for the current year will be less than last year on account of the production cut.

Financial Results

Sales for the year amounted to 91,051 long tons which were sold at an average price of £245 per ton, an increase of £25 per ton compared with the previous year. The profit margin per ton increased to £81 compared with £68 during the previous year.

On this basis the gross profits amounted to £7,331,000. To this has to be added the increase in the value of copper stocks amounting to £86,000. Interest earned, less interest paid, and miscellaneous minor items brought this profit to £8,052,000, which represents a 35 per cent increase on the corresponding figure for the previous year.

In these profit figures there is included a provision for a dividend receivable from Ndola Copper Refineries Limited, to which reference is made later.

The tax liability on this profit amounts to £2,740,000. The appropriation for replacements was set by the board at £1.2 million as compared with £1.1 million for the previous year. This appropriation is approximately in line with the average amount which appears likely to be required for this purpose in the next few years.

After making this appropriation the balance standing to the credit of the replacements reserve at June 30 is £2,534,000, which is sufficient to cover all sums authorized by the board for expenditure up to June 30, 1961.

The board has further set the figure of £1.2 million as a provisional amount to be used for this purpose in the current year's quarterly reports to shareholders.

The appropriation to general reserve has been agreed by the board at £1,450,000, i.e. an increase of £150,000 as compared with the previous year. This year's appropriation includes a final contribution towards the capital cost of Ndola Copper Refineries Limited, a further contribution towards the sums

which we are committed to lend to the Federal Government in respect of development finance, further payments made towards the cost of prospecting through the exploration companies in which we are shareholders, and certain other miscellaneous items which have to be financed out of current profits.

After taking into account the appropriations referred to above and sundry adjustments, including transfer to loan stock redemption reserve, the balance available for dividends was sufficient to justify the recommendation of a final dividend of 10½d. gross per share, less taxes, which, together with the interim dividend paid last July at a rate of 4½d. gross per share, less taxes, makes a total dividend for the year of 1s. 3d. gross per share, less taxes, which is an increase of 50 per cent on the total dividend for the previous year.

NDOLA COPPER REFINERIES

The past year saw continuous operations at the refinery, though not at capacity. A total of 61,231 long tons of copper was produced for customers, of which 95 per cent was for account of Roan Antelope Copper Mines Limited. It is expected that during the current year the refinery will treat all the output from Roan Antelope and that the total through-put may exceed 80,000 tons.

These operations resulted in a gross profit of £441,000 compared with £240,000 in the previous year. Miscellaneous adjustments of income from interest raised this profit to £448,000.

Allowable deductions for tax purposes exceed the trading profit so that there is no tax liability in respect of the year.

Depreciation has been set by the board at £99,000, and the transfer to general reserve at £175,000. A dividend at the rate of 5.8 per cent of the issued capital of the company, less Rhodesian taxes at 7s. 6d. in the £, has been recommended by the board and, if approved, will cost £163,000.

This is the second dividend declared by this company and two-thirds of it will accrue to Roan Antelope Copper Mines Limited and the remaining one-third to the other main shareholder, British Insulated Callender's Cables Limited.

MUFULIRA COPPER MINES

Production and Costs

Production of ore for the year amounted to 4.9 million tons compared with 4.1 million tons for the previous year. The average grade of ore sent to the mill was the same as that of the previous year, namely 2.65 per cent total copper. This resulted in a record production of 103,153 long tons of copper for the year, of which the greater proportion was electrolytic. During the current year it is expected that production of electrolytic copper will decrease and the production of fire refining grade copper will increase. The overall production of the mine is expected to be less than that of last year on account of the production cut to which I have already referred.

As far as costs of production are concerned, the average cost increased from £149 per ton in the previous year to £160 per ton. The main increases were in respect of mining, which has been

charged with relatively large sums for development in connection with Mufulira West, and the bonus scheme for employees which, being based on profits, has increased as a result of the generally larger profits of the Copperbelt during the year.

Financial Results

Sales for the year amounted to 103,040 long tons, which were sold at an average price of £249 per ton, an increase of about £21 per ton compared with the previous year.

The profit margin per ton of copper increased from £80 in the previous year to £89 and on this basis the gross profits amounted to £9,144,000. To this has to be added the increase in the value of copper stocks amounting to £386,000. Although our opening and closing stocks were approximately in balance the increase in the stock value is due to the increase in the cost of production.

Interest earned, less interest paid, and acceptance credit expenses brought the total profit to £9,954,000 compared with £7,574,000 in the previous year.

Tax liability on this company's profits is estimated to be £3,300,000.

The appropriation for replacements reserve has been fixed by the board at £1 million. This is less than the amount in the previous year, but is more in line with the long-term average and is sufficient to bring the replacements reserve at June 30 to a figure, namely £1,881,000, adequate to cover all expenditure authorized by the board which is expected to be incurred up to the end of June, 1961.

For the current year the board has set a provisional figure for the purpose of quarterly reports to shareholders at the rate of £1,200,000. As I have already indicated, this figure is somewhat in excess of the long-term average figure, but is necessary in view of the somewhat heavier than usual outgoings expected during 1961/62.

The appropriation to general reserve has been set at £1,600,000, an increase of £300,000 on the previous year. This is necessary in order to syphon off the above-mentioned increase in stock value which is a theoretical profit, also to finance certain commitments in prospecting companies in the group, and to make a further instalment towards our obligations to the Federal Government in respect of development finance. Miscellaneous items relating to debenture issue expenses, loan stock redemption and capital expenditure make up the balance of the appropriation to general reserve.

An interim dividend of 2s. 7½d. gross per share, less taxes, was paid in July. The board now recommends a final dividend of 5s. 3d. per share, which, if accepted at the annual general meeting, will make a total dividend for the year of 7s. 10½d. gross per share, less taxes, compared with the total dividend last year of 5s. 6d. gross per share.

Mine Position

The Mufulira West development has proceeded according to plan. This major expansion of the producing capacity of Mufulira is expected to be completed in mid-1962, and to add by then approximately 50 per cent to the capacity of the enterprise.

CHIBULUMA MINES

Copper Production and Costs

The production of ore was the highest yet attained by the company, amounting to 575,000 tons, running 4.65 per cent copper. This resulted in a production of 22,054 long tons of copper metal, mostly in the form of fire refining grade.

The average costs for the year amounted to £149 per ton, an increase of about £5 on the previous year. A reduction in mining costs and overhead charges was off-set by higher milling costs, due partly to adjustments relating to the apportionment of costs between copper and cobalt. Royalty payments and employees' cash bonus were higher and there were miscellaneous changes under other headings.

Cobalt Production and Costs

The cobalt refinery at Ndola experienced certain operating difficulties, in spite of which the cobalt matte production for the year at 9,778 short tons showed an increase on that of the previous year. The costs of production, including the cost of moving the matte overseas for refining and all overseas refining and other costs and mineral royalties, averaged 11s. 11d. per lb. of cobalt delivered U.S.A. after crediting revenue from the sale of 850 long tons of copper recovered as a by-product.

Sales

Copper sales for the year amounted to 22,485 long tons which realised an average price of £239 per ton compared with £217 per ton in the previous year.

In regard to cobalt, production of this metal is utilized at present to meet part of the annual obligation we have to the United States Government in respect of interest and loan capital repayments. We thus delivered 800 short tons of cobalt metal at an average price of £1,200 per ton with a total value of £967,000.

Financial Results

The gross trading profit on copper amounted to £2,041,000, easily a record profit for this company.

Deducting loan interest and adding interest receivable, the net profit came to £1,972,000, compared with £1,258,000 the previous year, before taking into account cobalt profits. The latter amounted to £12,000 compared with £87,000 in the previous year, due principally to the lower price received during the year.

The total profit for the year was thus £1,984,000, which does not attract any charge for tax on account of the Federal tax laws applying to new mines.

Under the terms of our agreement with the United States Government we are obligated to pay in each year metal to a value equivalent to 75 per cent of the previous year's net profits, after adding back interest payable.

During the year our cobalt and copper deliveries amounted to a value of £1,131,000 and this was allocated first, against accrued interest and, secondly, against redemption of loan capital. The loan from the United States Government at the end of June, 1960, was, therefore, reduced to the sum of £1,953,670. During the current year our repayment obligation will amount to £1,584,000.

Part of this will be allocated against interest and the balance against loan principal. We expect that the loan will have been reduced by June 30, 1961, to between £400,000 and £500,000 outstanding, out of the original £5 million advanced by the United States Government.

The board has appropriated the sum of £250,000 for the replacements reserve. The board has also provisionally agreed on a figure of £200,000 for the current year for the purpose of the quarterly statements to shareholders.

Of the balance of the profit for the year, £1,725,000 has been transferred to general reserve to cover the repayment of the loan capital already referred to and to provide for a reserve against expenditure of a capital nature.

Mine Development

We are engaged at present in the so-called Chibuluma West development scheme. This development has another three years before completion, and will then add about 4,000 long tons of copper per annum to the Chibuluma production. This scheme is proceeding according to plan.

Cobalt Market

During the year the price of cobalt was reduced in the world market from 12s. 6d. to 10s. 9d. per lb. The outlook for the cobalt market is somewhat obscure, with a prospect of an increasing surplus due to the completion of certain contracts with the United States stockpile. On the other hand, much effort is going into development of new uses of this metal, though it is too early to say what success will attend these endeavours. Furthermore, certain producing areas of the world have not been free of political troubles so it is premature to express any opinion about the future course of the market for this metal. We have, however, entered into certain arrangements which should provide us with a market for our cobalt after we have finished our own deliveries to the United States Government, at least for a year or two. Under these arrangements we shall continue to ship matte overseas rather than undertake final refining in Rhodesia.

RHODESIAN SELECTION TRUST

The revenue for the year came almost entirely from dividends payable by Mufulira Copper Mines Limited amounting to £2,498,000. Administration and sundry other expenses, less interest received, reduced this figure to a net profit of £2,398,000, on which there are no taxes payable.

This company has certain commitments in respect of expenditure on prospecting, and on further development work at Baluba and Chambishi orebodies. It is necessary to make provision out of profits for these commitments and, in addition, the company has recently made certain purchases of shares in the Mufulira, Chibuluma, Chambishi and Baluba companies, which will require financing from profits, though not wholly out of the profits of last year or this year. To meet these commitments the board has reserved £325,000 which will be transferred to the general reserve.

In July an interim dividend of 6d. per share, less taxes, was paid and the board now recommends a final dividend of 1s.

gross per share, less taxes, which, if approved in general meeting, will cost £1,414,000. The total dividend for the year will, therefore, be 1s. 6d. gross per share, less taxes, compared with 1s. 1d. for the previous year.

EXPLORATION COMPANIES

Northern Rhodesia

Prospecting work in Northern Rhodesia continued at a high rate during the year in the exclusive prospecting areas held by Kadola Mines Limited, Luapula Mines Limited, Mwinilunga Mines Limited and Chisangwa Mines Limited. A great deal of information about geological structures and mineral occurrences has been accumulated which is now resulting in more concentrated work in selected areas.

Southern Rhodesia

Rhodesian Selection Trust Exploration Limited has continued extensive prospecting work in Southern Rhodesia principally in the Lomagundi area. The results in this area continue to be interesting and encouraging.

Elsewhere

I reported last year on the agreement signed between Rhodesian Selection Trust Exploration Limited and the Bamangwato Tribal Authority of Bechuanaland whereby a prospecting concession over almost the entire area of 44,000 square miles in the Bamangwato territory was granted to this group. The company which has been formed to carry out the work on this concession is known as Bamangwato Concessions Limited, in which Rhodesian Selection Trust Exploration Limited holds a controlling interest, with Mond Nickel Exploration Limited, a Canadian company, and Minerals Separation Limited, a United Kingdom company, as partners. Operations conducted by this company began in January, 1960, and have continued on an increasing scale throughout the year.

Conclusion

The Rhodesian copper industry has not yet achieved its potential production capacity. Its prospects depend on two major considerations, the first being the future of the world copper market and the second the future of the political environment in Africa and, in particular, in Rhodesia. As far as the future of the copper market is concerned, I have expressed my confidence throughout many years, and nothing has occurred to alter my view in that respect. I think it can be taken almost for granted that there is a general realization on both sides of the industry that the future development and orderly growth of this industry depends on the maintenance not only of a correct price but a stable one. Production and marketing policies must be designed towards this sole end.

As far as the future of Rhodesia is concerned it is to be hoped that the negotiations in the coming year will be based on a sense of realism which will ensure a solution leading to stable political conditions. If this can be achieved, investment on a large scale should once again flow to this country and on that basis the prospects for all its inhabitants are considerably more promising than those which face most countries in a similar state of development. Without such stability, a golden opportunity will be either wasted or deferred.

CORONATION SYNDICATE LIMITED

(Incorporated in the Union of South Africa)

CHAIRMAN'S REVIEW

The Fifty-fifth Annual General Meeting of Coronation Syndicate Limited will be held in Johannesburg on December 19, 1960.

The following is an extract from the circulated review of the Chairman, Mr. S. F. Dench:

The net profit for the year earned by the Group, after charging £37,581 for depreciation and after transferring a further amount of £16,527 to Output Equalization Reserve, was £192,771 as compared with £186,696 for the previous year. Provision for taxation absorbed £53,167 and £40,000 has been transferred to general reserve. Dividends, totalling 7d. per share, accounted for £93,917 and there remains an unappropriated balance carried forward of £24,102 as against £18,415 brought in from last year.

Muriel Mine

The Burnett Shaft has been sunk 204 feet to 2,030 feet below surface and preparations for further sinking are well advanced.

The new reef reported in my review last year, and now named the Green Reef, has been located on the 5th level where 30 feet averaged 15.9 dwts. over 54 inches. A further 30 feet has been proved payable on both the 9th and 14th levels. On the 18th level the Drive East, which is being driven to the projected position of the Green Reef, encountered a lense averaging 11.2 dwts. over 26 inches for 55 feet. The correlation of this reef with the Green Reef has not yet been proved.

The Ore Reserves are computed at 201,500 tons, having a value of 10.5 dwts. over a stoping width of 50 inches. Compared with last year, there is an increase of 30,870 tons with an increase of 4 inches in width, while the value remains unchanged. Included in the Ore Reserves are 10,940 tons valued at 12.7 dwts. over 67 inches from the Green Reef.

Arcturus Mine

Primary development accomplished was 6,641 feet reflecting an increase of 700 feet over the previous year. The footage sampled was 3,250, of which 1,438 feet (44 per cent) were payable averaging 7.9 dwts. per ton.

No shaft sinking was done during the year. Preparations for sinking the No. 2 Internal Incline Shaft to No. 22 level are well advanced. Since the end of the year under review further payable ore, on the Slate Reef, has been exposed above the 5th level. The 10th level Drive West on the Slate fissure, which at present is the farthest point west of any workings, has encountered a small stretch of encouraging values. A foot-wall diamond drill hole on the 19th level has intersected the downward extension of Slate shoot and driving to the point of intersection is in progress.

The Ore Reserves are computed at 347,500 tons having a value of 7.3 dwts. over a stoping width of 58 inches. Compared with last year there is a decrease of 53,000 tons, the average width is lower by one inch, while the value is 0.1 dwts. higher.

WEST WITWATERSRAND AREAS LIMITED

IMPORTANT CHANGES IN INVESTMENT PORTFOLIO

REVIEW OF DRILLING OPERATIONS

DR. W. J. BUSSCHAU ON GOLD INDUSTRY'S RECORD YEAR

The Twenty-Eighth Annual General Meeting of the above-mentioned Company will be held in Johannesburg on December 1. The following is an extract from the Statement for the year ended June 30, 1960, by the Chairman, Dr. W. J. Busschau:—

A detailed list of the Company's investments at June 30, 1960, is set out in the Annual Report, and this reflects the various changes made during the year under review. In the first place, as mentioned by the Chairman in his Statement to Members last year, 300,000 "A" shares in Western Deep Levels Limited were sold at a substantial profit during the year in order to provide funds to enable the Company to exercise its subscription rights in respect of the "B" shares issued by Western Deep Levels. By virtue of its holding of 799,845 Western Deep Levels "A" shares, the Company subscribed for 199,961 "B" shares at a price of 40/- per share and, as a result of this holding, acquired the right to subscribe during May, 1961, for a further 199,961 "B" shares at a price of 45/- per share.

Further, as also mentioned by the Chairman in last year's Statement, the Company acquired from New Consolidated Gold Fields Limited for the sum of £70,761 a one-half share of that company's participation in a syndicate known as "Western Areas Prospect". Arising from the purchase of this one-half share, the Company received from Western Areas Gold Mining Company Limited a refund of £33,329 and subscribed at par for 139,339 units of stock of 10/- each and 218,043 shares of 10/- each, 2/6d. paid up, in that Company. As a result of its participation in the underwriting of the issue, the Company took up a further 2,145 units of stock in the Western Areas Company. The balance of 7/6d. due on the partly-paid shares will be called up in equal instalments in December, 1960, and in 1961. Consequent upon its participation, the Company has accepted an offer by Johannesburg Consolidated Investment Company Limited of a 3½ per cent contributory participation in a syndicate known as "Western Areas No. 2 Prospect".

In May, 1960, the Company's holding in West Driefontein Gold Mining Company Limited was increased from 1,444,006 shares to 2,888,012 shares as a result of that Company's capitalization issue of one new share for every share held.

Since the close of the year the Company has subscribed for 1,120,912 shares of 10/- each, at par, in Free State Saaiplaas Gold Mining Company Limited, and has transferred 200,000 of these shares to its subsidiary, Westwits Investments Limited, thereby making the latter's holding 2,131,050 shares.

In addition to this subscription the Company participated to the extent of £500,000 in a loan to £2,500,000 to Free State Saaiplaas Gold Mining Company Limited. This loan has been fully drawn on and is repayable between July 1, 1961, and December 31, 1964.

The effect of the recent participation in the finance of the Free State Saaiplaas

mine has been to reduce the cash available to meet future commitments in the issue of Western Deep Levels "B" shares to be made in May, 1961, and the balance of the amounts to be paid on Western Areas shares as well as the further need for funds for the company's own probable drilling programme and for the participation in the Western Areas No. 2 Prospect. The Company, however, expects to receive a rising stream of dividends in the future and consequently rather than raise fresh money it was considered that its needs could best be met by a short-term loan of £500,000. Accordingly the Company has arranged with The National Finance Corporation of South Africa to borrow £500,000 by the issue of debentures.

Drilling Operations

During the year under review exploratory drilling operations were continued in borehole E.10E on the farm Gerhardminnebron No. 139, and commenced in four new boreholes, namely, No. 21 on the farm Rietfontein No. 349, No. 22 on the farm Doornkloof No. 350 and E.8K and E.8L on the farm Kleinfontein No. 141.

Boreholes Nos. 21 and 22 were sited to the east and south of Libanon with the objects of exploring the Ventersdorp Contact Reef in this area, and of determining the position and effect of the Witpoortje Fault. Borehole No. 21 penetrated the Transvaal System into lavas of the Ventersdorp System and intersected the Black Reef at a depth of 4,448 feet assaying 11.7 dwt. over a corrected width of 6.4 inches equivalent to 75 inch-dwt. At 8,490 feet this borehole intersected the Ventersdorp Contact Reef assaying 41.2 dwt. over a corrected width of 32.0 inches equivalent to 1,318 inch-dwt. This intersection, together with information from neighbouring mines, indicates that a large area to the south-east of the Libanon mine is underlain by Ventersdorp Contact Reef at mineable depth, and the high value disclosed may be of considerable significance. Further drilling is being planned to determine the full extent of this reef-bearing ground and its economic potentialities.

Boreholes E.8K and E.8L were sited to the south-west of the Doornfontein mining lease area in order to explore the gold tenor at depth of the various reef horizons especially the Carbon Leader. During the year these two boreholes together with Boreholes E.10E and No. 22 traversed only beds of the Pretoria and/or Dolomite Series of the Transvaal System. Since the close of the year Borehole No. 22, between 5,469 feet and 5,470 feet, intersected the Black Reef Series comprising a narrow quartzite band with negligible gold values, whence it entered lavas of the Ventersdorp System. At a depth of 6,259 feet the borehole passed into uncorrelated quartzites which belong to the Witwatersrand System. The Ventersdorp Contact Reef was not intersected owing to the presence of a syenite intrusive between the Ventersdorp and Witwatersrand Systems. Similarly since the

end of the year Borehole E.10E passed through the Black Reef Series between 3,543 and 3,593 feet, the basal band assaying 2.2 dwt. over a corrected width of 5.8 inches equivalent to 13 inch-dwt. Below the Black Reef Series the borehole traversed Ventersdorp sediments to a depth of 3,679 feet where it entered the Upper Witwatersrand System comprising quartzites with several robust conglomerate bands belonging probably to the Livingstone-Johnstone Reef Groups. These bands contained negligible gold values.

The Gold and Uranium Industry

The number of European employees in the industry showed a further increase during the year and it is gratifying to record that the supply of such European labour proved adequate. Further, as a result of a large increase in the number of South African recruits, the decline in the number of miner trainees in the industry was reversed during the year.

During the year under review the satisfactory supply of Native labour was maintained and in March, 1960, the number of Natives in service reached the all-time record total of 389,970. The maintenance of this most satisfactory supply of Native labour during the disturbed times which have occurred during the year, emphasizes the confidence the Natives, not only from the Union but also from various other territories in Africa, have in the stability of the gold mining industry and in the treatment it accords to its labour force.

As a result of this satisfactory labour position and the increasing rate of production of the new mines (i.e. those that have come into production since 1945) coupled with the improvement in the average yield of gold per ton milled, the upward trend of gold production continued. The increase in the output of the mines of the West Wits Line was not far short of half a million ounces, and during the year the industry produced over 20 million ounces of gold which constituted a new record. The revenue of the industry for the year exceeded £250 millions for the first time. The working profit from gold production amounted to over £93 millions an increase of more than a quarter when compared with the corresponding figure for the previous year. The working profit received from the production of uranium oxide and acid amounted to over £29 millions thereby raising the total working profit of the industry to over £122 millions. In consequence dividends rose to over £46 millions, also a new record. These new records mean that gold is being extracted faster than ever before, and new mining ground must be brought into production if future output is to be maintained or increased.

In previous years successive Chairmen of this Company have raised the matter of gold mining taxation, objecting to its discriminatory burden. Consequently we have noted with appreciation that the Chamber of Mines has had discussions with the Government on this subject. In view of the various occurrences which have recently taken place not only in the Union but also in various other African territories, it has now become difficult to raise fresh capital for any South African ventures. I would, therefore, like to take this opportunity to stress again how urgent and important it is for the Government to reduce the unnecessarily heavy burden of the disci-

minatory rate of gold mining taxation in order that fresh capital may be attracted into the country, and also to enable the industry, through companies like yours, to provide, through appropriations from net income, new capital monies in order that the resources of the country should be developed to the fullest extent. Some claim that we do not need overseas capital, but these must be blind to the unfortunate reductions in incomes and the standard of living that would follow. Even to maintain our present standard would require a substantial inflow to finance new mining and other enterprise.

The Company's dividend income from its shareholding in the five producing mining companies on the West Wits Line has increased steadily since 1948 and

further increases in this dividend income may be expected in the future. The Company's dividend income is already being increased as a result of its indirect holding in Harmony Gold Mining Company Limited, and it is expected that within the next few years it will be augmented further from its direct and indirect holding in Free State Saaiplaas Gold Mining Company Limited and thereafter from its shareholding in Western Areas Gold Mining Company Limited and Western Deep Levels, Limited. Accordingly an assessment of the future prospects of the Company indicates that it should be feasible during the next few years to provide for the repayment of the debentures and still to make further improvements in the rate of the Company's annual dividend distributions.

THE NEW PIONEER CENTRAL RAND GOLD MINING COMPANY LIMITED

(Incorporated in the Union of South Africa)

CHAIRMAN'S REVIEW

The following is a statement attached to the Report and Accounts for the year ended June 30, 1960, issued by the Chairman, **Mr. Jack Scott**.

The Company's activities during the year were mainly concerned with the development of its property interests in the Stilfontein area, and Stilfontein Township. The population of the Township is growing and is now reliably estimated to be in the neighbourhood of 15,000. On the establishment of the Township and in view of the long delay before it was proclaimed, it was necessary for this Company, as the main Township owner, to attract to the Township business people to cater for the essential needs of the early mining population. As it was impossible for merchants to obtain the usual building society loans for the purpose of erecting premises, it fell upon the Company to build suitable shops for letting. In addition, your directors felt that this Township should not be allowed to develop on haphazard lines as has happened in other townships elsewhere and for this reason continued with their policy of building business premises for letting and were thus able to establish a high architectural standard for such buildings and to attract to the village a reputable and stable business community. By the end of this year, the Company's investment in business premises in the suburbs and in the Civic Centre, will amount to approximately £650,000 and it is my feeling that the time has come when the task of building further business premises can safely be left in other hands. In future the Company should therefore make available to the business community and to such banking, insurance and finance houses, as wish to invest in the area, the necessary stands and leave it to them to erect their own buildings.

The 24 new shops to which reference is made in the Directors' Report will enable practically every business to be duplicated, with the result that there will be healthy competition and we are hoping that the spending power of the residents will in future be concentrated more in Stilfontein itself than in the past, with resulting benefit to the commercial community. The expenditure on these additional premises will be largely financed by further long term borrowings.

The drive-in theatre, which is planned for the as yet unproclaimed Extension 4, is still held up by governmental delays and although the consent of the Townships Board was obtained 18 months ago, as a result of a new Provincial Ordinance governing the establishment of drive-in theatres, the application for the necessary authority will have to be renewed.

You will have noted from the Report that, in addition to our interests within Stilfontein Township, including the buildings to which I have referred and the residential erven still available for sale in Extension 4, we have other valuable interests in the Stilfontein area. These include the garage and shops on Mapaiskraal, the light industrial township which is being planned just south of the railway and the recently acquired area on Hartbeestfontein No. 422, including the new native trading store erected thereon.

The sale of stands in Ellaton Township, the Company's other major property investment, has been small, due to delays in obtaining the consent of the Klerksdorp Town Council to the re-layout of the business centre. I understand that the necessary new town planning scheme will come into operation shortly and that the building of 5 shops, catering for the essential requirements of the community, which will then be possible, will lead to increased sales of stands in this attractive Township.

This concludes my review of the property interests of your Company and I will now deal with its major asset, i.e. its holding of quoted investments. The story is very quickly told. There have been no changes in the holdings during the financial year, or since, but, by reason of market fluctuations too well known to you, the total market value fell during the year from £3,681,239 to £2,807,968. It has since recovered to £3,145,899 as at October 31, 1960. The position calls for no comment from me, other than the remark that our faith in the intrinsic value of these investments remains unshaken and is supported by the consistency of the dividend income which has varied marginally in our favour as compared with the previous year.

In regard to the minor assets of the Company, representing unquoted shares

and advances, you will have noted that we have again found it necessary to set aside a substantial amount as a provision for losses and contingencies, the figure being £50,000, less a recoupment of previous provisions, leaving £42,496 as a net debit against the profits of the year. This further provision is related mainly to the affairs of two companies. I have mentioned previously the difficulties experienced by the S.A. Silica Bricks Limited owing to rising costs and increasingly competitive market conditions. These difficulties have tended to increase rather than abate and with the uncertain outlook for the building trade in 1961, it appears that a major curtailment of the activities of the Company is inevitable. The balance of the provision relates to our investment in the Klerksdorp newspaper published by The Klerksdorp Record (Proprietary) Limited. During the year we found it desirable to buy out the majority shareholder and take over complete policy control. The affairs of the Company have been satisfactorily re-organized, but it has been necessary to provide for a writing down of our investment. These minor interests now stand in total at £178,000 of which £130,737 is represented by your interest in the Kenilworth Estate.

As regards the liabilities of the Company, there is little variation from previous years, but I should perhaps comment on the gradual build-up of the provision for future taxation which has now reached £123,000. This is related to profits on sales of property already reflected in the accounts and in regard to which taxation will, in due course, have to be paid. For the moment the liability for tax has been deferred as a result of expenditure to be incurred on development of further township areas.

You will have noted that the profit on sales of landed property increased by approximately £17,000 whilst rentals increased marginally. Substantial increases in rentals may be expected in the current and coming years as a result of the building operations now in progress in the Civic Centre. Dividends received, at a total of £294,856, represent the dominant item in our revenue and have reached a point where one cannot reasonably look for substantial further increases, unless the whole pattern of profits from gold and uranium takes an upward trend. Expenditure at a total of £54,830 has increased by £3,154 mainly by reason of greater depreciation on township services. The net provision for losses and contingencies has decreased by £17,504 with the result that the profit for the year at £353,241 has improved by £37,632 as compared with the previous year. Dividends declared have improved by £25,000 and the provision for taxation has decreased by £3,000, with the net result that the undistributed profits carried forward now stand at £195,628 as compared with £169,387 at the commencement of the year.

To summarize, the Company is approaching a point at which it will no longer require to devote substantial sums of money annually to the development of its property interests and assuming the continued inflow of dividend revenue on the scale which we are entitled to expect, considering the general quality of our investments, we have every reason to feel satisfied as to our ability to maintain or slightly increase the dividend rate, whilst at the same time improving the general cash position.

BUFFELSFONTEIN GOLD MINING COMPANY LIMITED

(Incorporated in the Union of South Africa)

CHAIRMAN'S REVIEW

The following is a statement attached to the Report and Accounts for the year ended June 30, 1960, issued by the Chairman, **Mr. Jack Scott**.

The Directors' Report and the Accounts for the year ended June 30, 1960, give you full information on the state of the Company's affairs at that date and on the continued progress of the mine during its third year of full production.

The working profit from the production of gold, uranium and acid amounted to £6,077,133, an improvement of more than £1,000,000 over the previous year. After provision for interest and sundries the net profit carried to appropriation account was £5,752,450, against which £2,303,590 was appropriated for capital expenditure, £1,436,420 for the redemption of loans and £1,993,750 for Dividends Nos. 5 and 6 representing in total 3/7½d. per share.

In regard to the loan obligations reflected in the Accounts, the amount due to the Anglo American Corporation has since been reduced by £500,000. An amount of £500,000 was repaid to the National Finance Corporation during the year. The uranium and acid loans are being reduced by regular quarterly payments.

As compared with the previous year, the average monthly milling rate increased from 126,600 tons to 143,800 tons, while the recovery grade increased from 6.967 dwt. per ton to 7.782 dwt. per ton.

During the first four months of the current year, the milling rate has averaged 147,300 tons per month, with a recovery grade of 8.238 dwt. of gold per ton and 0.521 lb. of uranium per ton, yielding a total working profit of £2,168,585 derived as to £1,321,585 from gold and £847,000 from uranium and acid.

In regard to development, the report of the Consulting Engineers for the year under review shows that of the 20,895 feet sampled, the average value of the payable footage was 595 inch/dwt. for gold and 42.50 inch/lb. for uranium. During the first four months of the current year development totalled 38,131 feet. Of this 8,025 feet were on reef and of the 8,055 feet sampled 90.9 per cent proved payable at an average value of 645 inch/dwt. for gold and 37.33 inch/lb. for uranium.

The ore reserves were built up to 4,275,000 tons at 9.27 dwt. per ton for gold and 0.726 lb. per ton for uranium, an increase of 1,241,000 tons and a slight variation in values as compared with the last published figures.

Included in the above total development figures are approximately 26,000 feet developed under prospecting permit on that portion of the farm Mapaiskraal, the mineral rights of which were bought last year and which adjoins the western boundary of the existing lease area. The sampling results in this area are included in the total figures for the year, but are of sufficient interest to merit separate comment. Of the 26,000

feet developed, 1,374 were on reef and of 1,380 feet sampled, 100 per cent proved payable at an average value of 562 inch/dwt. for gold and 37.17 inch/lb. for uranium. The corresponding figures in respect of this area for the first 4 months of the current year were 9,953 feet developed, of which 3,880 feet were sampled, with a payability of 98.1 per cent and an average value of 714 inch/dwt. for gold and 34.37 inch/lb. for uranium.

In the meantime, and pending the inclusion of the area in the Company's mining lease, the prospecting permit has been endorsed by the Department of Mines to permit stoping operations up to a maximum of 1,000 tons per day.

It is common knowledge that the Company's uranium sales contract expires in June 1967 but may in certain circumstances be terminated six months earlier. From the date of termination there will almost certainly be a drastic reduction in the volume of uranium sales and, unless steps are taken immediately to remedy the position, a consequent loss of profits. It has been considered prudent therefore at this stage to initiate steps to increase the Company's revenue from the production of gold so as to offset as far as possible the loss in uranium profits. This will involve the increase of the ultimate milling rate to 180,000 tons per month, which will be within the capacity of the existing plant when the extensions, which have been in progress for the past year, are completed. The remaining expenditure on these extensions is relatively small, but the supporting mining programme will involve substantial expenditure over the next few years and it is appropriate that I should give you some information on the point at this stage.

Shareholders know that hitherto mining has been confined to the comparatively shallow portion of the lease area and that, in due course, it will be necessary to exploit the deeper levels in which the greater portion of the Vaal Reef occurs, i.e. below the 5,000 foot horizon and down to 8,000 feet below surface.

The existing Pioneer twin shaft system, which serves down to the 5,000 foot horizon, is almost fully extended, both as regards ventilation and hoisting capacity, and before any increase in the milling rate is possible, one other twin shaft system from surface will be required.

You were advised last year that the sinking of the Eastern twin shafts, near the eastern boundary of the lease area, would commence in 1962. Preparatory operations were commenced last year and pre-sealing operations, by means of cementation, should be completed during 1961. A start has been made on the foundations for 4 winders, which have been ordered for delivery during 1961. This new twin shaft system will be commissioned by 1964.

To provide access to the deeper levels of the mine, i.e. below the 5,000 foot horizon, 3 sub-vertical shafts will be necessary.

No. 1 sub-vertical, started in 1958, is due to be commissioned early next year and will serve the deeper levels in that portion of the lease area south of the Pioneer shafts. The sinking of No. 2 sub-vertical, to serve the central area between the Pioneer and the Eastern twin shafts, will be started in 1965 and should be completed early in 1967. The sinking of No. 3 sub-vertical, to serve the deep area of the mine south of the Eastern twin shafts, is scheduled to commence in 1967.

These shaft facilities will provide for the mine's hoisting and ventilation requirements for the next 25 years.

The implementation of this programme will involve an average capital expenditure of approximately 2½ million pounds per annum for the next 7 years, but during this period profits should increase to an extent sufficient to finance the capital programme without long term borrowing. By the time the uranium contract expires the main capital burden will be out of the way and it should be possible to maintain a steady dividend rate, both before and after the expiry of the contract, at approximately the present level. It might, however, be prudent to revert to 3/6 as against the slightly higher declaration last year.

In the planning of this programme no account has been taken of a possible stretch out of deliveries due under the present uranium contract beyond 1966. If this were to happen, any resulting interim shortfall in cash will necessitate short term borrowings.

This concludes my review of the operations at the mine over the past sixteen months. I wish to place on record the Board's appreciation of the loyal and efficient services rendered by the Manager, Mr. F. R. Nott, and his staff at the mine, as well as by the staffs of the Johannesburg and London offices of the Company.

From December 5, the head office address of those companies of the Rhodesian Selection Trust group, at present established in Harwicke House, Salisbury, Southern Rhodesia, will be Livingstone House, 48 Jameson Avenue Central, Salisbury, C.4. P.O. Box 1479, telephone 61441.

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THE RENONG TIN DREDGING COMPANY

SUBSTANTIALLY IMPROVED RESULTS

SIR JOHN HAY'S STATEMENT

The 47th Annual General Meeting of The Renong Tin Dredging Company, Limited will be held on December 13 at 52/54, Gracechurch Street, London, E.C.

The following is an extract from the circulated statement of the chairman, Sir John Hay:—

During the last financial year tin exports continued to be restricted under the terms of the International Tin Agreement, but in contrast with the preceding year the permitted rate was progressively increased. In 1958/59 total world exports were held down to 86,000 tons, but in the period under review the limit was raised to 128,500 tons. Even with the increasing flow of metal, the average monthly price which was £792.3 per ton in July, 1959, varied only marginally throughout the year, and in June, 1960, was £793.2 per ton. With effect from October 1, 1960, all restrictions on the export of tin have been lifted entirely and producers may once again despatch

to smelters the whole of their output of ore.

The manager of the Tin Buffer Stock still has more than 10,000 tons tin metal in reserve as well as substantial funds which he can employ to stabilize prices should freedom from export restriction prove too heady a wine for the industry after an abstinence of nearly three years, although since May this year, his authority to buy and sell tin does not operate except when the price is below £780 or above £830 per ton.

Accounts

Total sales during the year amounted to 884 tons of ore as compared with 654 tons in 1958/59. In consequence, and because of the higher average price received, the profit before tax was nearly trebled, at £76,722. The Board recommend an increase in the Ordinary Dividend for the year to 9d. per 2s. unit of Stock, free of tax.

Mining Operations

At Jinjang tin-ore production exceeded that for the previous year by a small margin, although the average recovery was reduced from 11.26 oz. per cubic

yard to 8.47 oz. The poor recoveries have been aggravated by loss of digging depth due to uneven formation of the bedrock. It is hoped that the unit will move into higher-grade ground within the next few months.

No. 3 Dredge, which was benched in May 1958 because of tin restriction, was put to work again at the end of November, 1959. The tailings section at Rasa, where this unit has operated so successfully, has little remaining ground containing payable values, but it is hoped that sufficient remains to keep this dredge operating throughout the current financial year, after which it must close down for good.

No. 2 Dredge has continued working well throughout the year at Kuala Kubu Lama, but in a sector where the ground values are lower than the average for the whole selected area.

The Company has been fortunate in acquiring at a favourable price a dredge that is suitable for transfer to Kuala Kubu Lama. It is a wood-burning steam dredge, as are both dredges at Rasa, but it has a greater capacity than either and is in far better condition structurally than No. 3 which it replaces. Such a unit should be capable of working profitably at Kuala Kubu Lama where the ground values are only moderate.

MINING FINANCE—Continued

tern Areas Gold Mining Company. As at June 30, Anglo-Rand's direct holding in Winkelhaak was 112,000 10s. shares, in Bracken was 17,212 10s. shares (1s. paid) in Leslie was 96,333 shares of 10s. each (1s. paid) and in Western Areas Gold Mining 100,000 10s. stock units and 266,732 10s. shares (2s. 6d. paid). With the calls still outstanding on these shares there is a need for cash conservation, since investment income for this company is still largely a thing of the future. Moreover, the year under review was a poor one for share dealing, which accounts for the low net profit of £8,250 (£47,739). Nevertheless Anglo-Rand offers a way into participating in the development of the Kinross field which could be missed in the rush for more obvious shares.

Mazapil Still in the Red.—The Mazapil Copper Co.'s accounts for 1959 show a group loss after tax of £29,700 (£57,473) despite the continuation of the government subsidy which amounted to £200,660 (£259,749). This unfortunate result was accounted for partly by a four-week labour strike towards the end of the year and partly by a subsidence of the company's main orebody at Cata Arroyo in November 1959. This has also resulted in a loss of production in the current year which will again adversely affect the results for 1960, and has reduced the reserves in sight in the sulphide orebody to an, as yet, unpredictable degree.

New Wits' Profit.—New Witwatersrand Gold Exploration's net profit before negligible tax for the year to June 30 last was only some £50,000 down on the preceding year at £289,133. As the previous year had included a once for all profit on sales of shares to the American-South African Investment Company totalling £174,237 this must be counted as a satisfactory result reflecting an increase of about £100,000 on income from investments at £251,955. Dividend distributions for the year totalled

7½d. compared with 9d. in 1959 which included a bonus distribution of 1½d.

The quoted investments in this company's portfolio are as to 81 per cent in gold mines (of which 16 per cent are not dividend payers), 5 per cent in diamonds and base minerals and 14 per cent in other finance and exploration companies. The company also holds mineral rights and participating interests in a number of potentially interesting areas.

New Pioneer's Higher Dividend.—Primarily an investment company, New Pioneer Central Rand Gold Mining now appears to have reached a plateau in its dividend earnings above which the Chairman, Mr. Jack Scott, does not expect any significant advance. On the other hand he thinks that the company is nearing the point when it need no longer devote substantial sums to the development of its property interests and foresees the prospect of being able to maintain, if not slightly increase, the dividend rate while improving the company's cash position. The company's quoted investments at June 30 last stood at £3,700,000 against £2,800,000 a year previously, but by the end of last month had recovered to £3,100,000 in line with the general recovery in South African share values. Dividend payments for the past year totalled 3s. per 5s. share against 2½d. in the previous year. At their present price of around 35s. the New Pioneer's shares yield 8.6 per cent. (Chairman's statement on page 612).

Selection Trust Interim.—Selection Trust has declared an interim dividend for the year ending March 31, 1961, of 3s. per unit of ordinary stock, less income tax at 7s. 9d. in the £. It is pointed out that this interim has been increased solely for the purpose of reducing the disparity between the interim and final payments, and it is expected that the total dividend for the year will be maintained at 7s.

Rahman Hydraulic.—Rahman Hydraulic Tin earned a net profit for the year to June 30 last of \$M118,889 (\$M152,917).

Correspondence

THE EDITOR,
The Mining Journal
Sir,

The omission of Canadian non-subsidized gold mines from your article on page 479 of the October 28 issue cannot be allowed to pass without correction. For example, our own Company, Bralorne Pioneer Mines Limited, is receiving no subsidy and at yesterday's \$6.00 share price is yielding 6.7 per cent annually. There are several other non-subsidized Canadian gold mines, namely Cochenour Willans, Giant Yellowknife, Dickenson, Consolidated Discovery Yellowknife, Campbell Red Lake, Kerr-Addison, Leitch, Macassa, and Madsen Red Lake with current yields of 4 to 7 per cent.

Yours, etc.,
FRANC R. JOUBIN
President.

November 15, 1960.
Bralorne Pioneer Mines Ltd.,
Vancouver 1, B.C., Canada.

INTERNATIONAL MINERAL PROCESSING CONGRESS, 1960

This Congress was held at Church House, Westminster, London, S.W.1, from April 6-9, 1960, and was the subject of a Mineral Processing Supplement issued by *The Mining Journal* on March 25, 1960.

The proceedings have now been published by the Institution of Mining and Metallurgy in a volume of 1,109 pages, comprising the 52 original papers presented, together with the numerous and important contributions to the discussion and the authors' replies to questions and criticisms. Each section of the subject is dealt with separately and there is a full personal and subject index. Copies are available from the Institution of Mining and Metallurgy, 44 Portland Place, London, W.1, price £5 (\$14.50).

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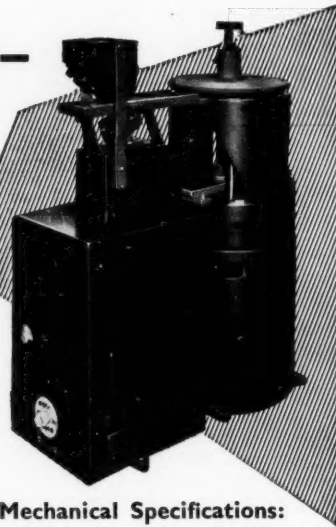
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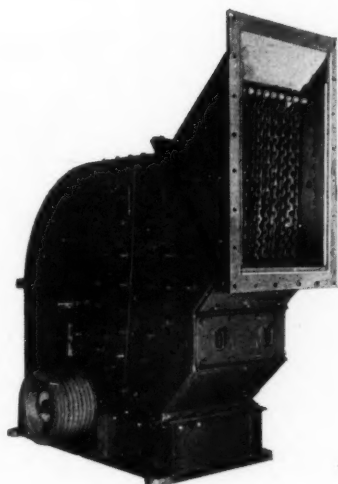
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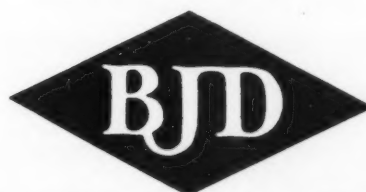
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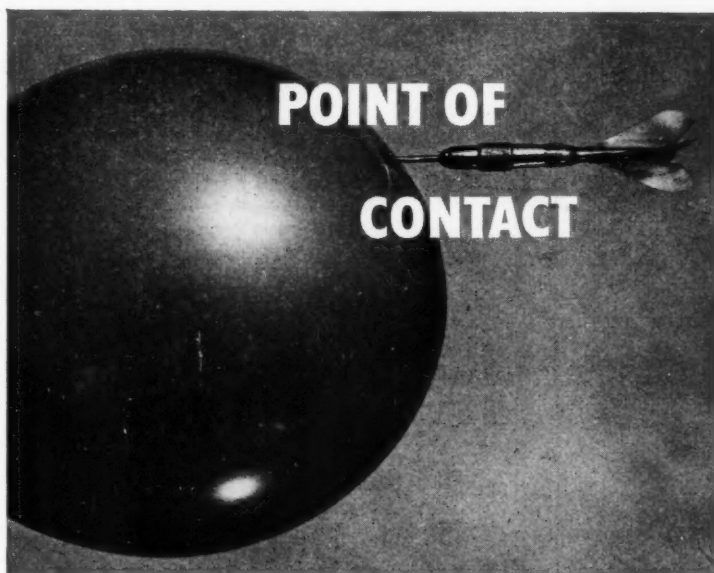
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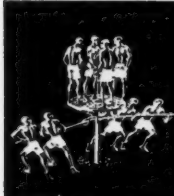


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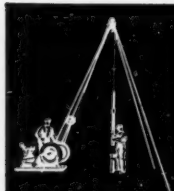
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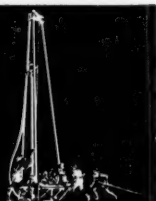
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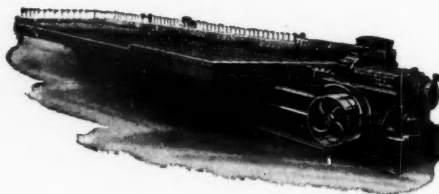


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★While a mine is at the development stage, it is of vital importance to have a visual picture of its position in relation to the field as a whole. Otherwise the quarterly results published by the companies lose much of their significance.

★Results reported from adjacent mines often have a direct bearing on the one in which you are interested, which, however, can only become apparent if you have clearly in mind the position of all the properties in relation to one another.

★The Technical Map Service, located in Johannesburg, performs this service most effectively, for the Klerksdorp field. This map and its accompanying statistical handbook show:-

—the exact position of each mine on the field

—where in each property boreholes have been or are being sunk, how far they have gone and what the core recovery has been on reef intersection

—what shafts are being sunk, how far they have gone and what the final depth is expected to be.

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The Mining Journal

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LONDON METAL AND ORE PRICES, NOV. 24, 1960

METAL PRICES

Aluminium, 99.5%, £186 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £200 per ton
Arsenic, £400 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 11c. 0d. lb.
Cerium (99%) net, £15 0s. lb. delivered U.K.
Chromium, Cr. 99% 6s. 11d./7s. 4d. lb.
Cobalt, 12s. lb.
Germanium, 99.99%, Ge. kilo lots 2s. 5d. per gram
Gold, 254s. 6d.
Iridium, £20/£23 oz. nom.
Lanthanum (98%/99%) 15s. per gram.

Magnesium, 2s. 2½d./2s. 3d. lb.
Manganese Metal (96%/98%) £275/£285
Nickel, 99.5% (home trade) £600 per ton
Osmium, £18/£22 oz. nom.
Osmiridium, nom.
Palladium, imported, £8 12s. 6d.
Platinum U.K. and Empire Refined £30 5s.
Imported £28½/£28¾
Quicksilver, £70½ ex-warehouse
Rhodium, £43/£45 oz.
Ruthenium, £14/£16 oz. nom.
Selenium, 46s. 6d. per lb.
Silver, 79½d. f. oz. spot and 79½d. f.d.
Tellurium, 28s. 6d. lb.

ORES AND OXIDES

| | |
|---|--|
| Antimony Ore (60%) basis | 21s. 6d./22s. 6d. per unit c.i.f. |
| Beryl (min. 10 per cent BeO) | 240s./245s. per l. ton unit BeO |
| Bismuth | 30% 5s. 0d. lb. c.i.f. |
| | 20% 3s. 3d. lb. c.i.f. |
| Chrome Ore— | |
| Rhodesian Metallurgical (semifriable 48%) (Ratio 3 : 1) | £15 5s. 0d. per ton c.i.f. |
| " Hard Lumpy 45% | £15 10s. 0d. per ton c.i.f. |
| " Refractory 40% | £11 0s. 0d. per ton c.i.f. |
| " Smalls 44% | £13 5s. 0d. per ton c.i.f. |
| Baluchistan 48% | £11 15s. 0d. per ton f.o.b. |
| Columbite, Nigerian quality, basis 70% combined pentoxides (Ratio 10 : 1) | Nb ₂ O ₅ : Ta ₂ O ₅ 175s./176s. per l. ton unit c.i.f. |
| Fluorspar— | |
| Acid Grade, Flotated Material | £22 13s. 3d. per ton ex. works |
| Metallurgical (75/80% CaF ₂) | 156s. 0d. ex. works |
| Lithium Ore— | |
| Petalite min. 3½% Li ₂ O | 50s. 0d./55s. 0d. per unit f.o.b. Beira |
| Lepidolite min. 3½% Li ₂ O | 50s. 0d./55s. 0d. per unit f.o.b. Beira |
| Amblygonite basis 7% Li ₂ O | 75s./85s. per ton f.o.b. Beira |
| Magnetite, ground calcined | £28 0s./£30 0s. d/d |
| Magnetite Raw (ground) | £21 0s./£23 0s. d/d |
| Manganese Ore Indian— | |
| Europe (46%-48%) basis 60s. 0d. freight | 73d./75d. c.i.f. nom. |
| Manganese Ore (43%-45%) | 69d./71d. c.i.f. nom. |
| Manganese Ore (38%-40%) | nom. |
| Molybdenite (85%) basis | 8s. 11d. per lb. (f.o.b.) |
| Titanium Ore— | |
| Rutile 95/97% TiO ₂ (prompt delivery) | £28 0s. 0d. per ton c.i.f. Aust'n |
| Ilmenite 50/52% TiO ₂ | £11 10s. per ton c.i.f. Malayan |
| Wolfram and Scheelite (65%) | 148s. 0d./153s. 0d. per unit c.i.f. |
| Vanadium— | |
| Fused oxide 95% V ₂ O ₅ | 8s./8s. 11d. per lb. V ₂ O ₅ c.i.f. |
| Zircon Sand (Australian) 65-66% ZrO ₂ | £16/£16 10s. ton c.i.f. |

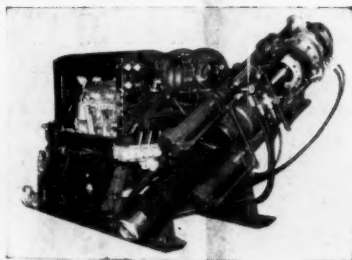


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